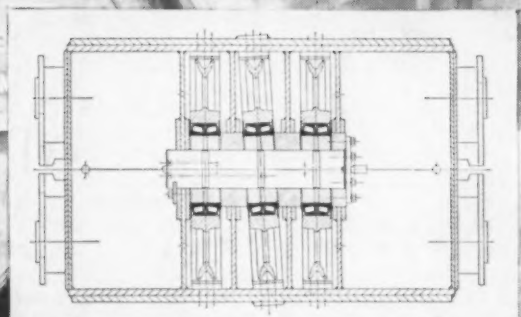
A CHILTON PUBLICATION

the Iron Age

E NATIONAL METALWORKING WEEKLY February 11, 1954

ENTS PAGE 2

UNIV. OF MICHIGAN
FEB 11 1954
EAST ENGINEERING
LIBRARY



How **INDUSTRIAL BROWNHOIST CORPORATION** mounts the sheaves of this 80 cubic foot slag bucket on Timken bearings to assure long life and trouble-free operation.

How TIMKEN® bearings keep sheaves turning smoothly on 80 cubic foot slag bucket

WHEN this 80 cubic foot bucket scoops up slag, its sheaves have to turn smoothly. Otherwise, the bucket would be slowed down, and the cables would scuff and wear out. Industrial Brownhoist Corporation avoided both problems by mounting the sheaves on Timken® tapered roller bearings.

Timken bearings keep the sheaves rotating easily and freely because their true rolling motion and incredibly smooth surface finish practically eliminate friction. The bucket isn't slowed down—the cables don't scuff. And Timken bearings stand up under the heaviest loads because the line contact between their rollers and races gives them extra load-carrying capacity. Maintenance is reduced, wear minimized.

What's more, Timken bearings handle the tough shock loads because they're case hardened to give a tough, shock-resistant core and a hard, wear-resistant surface. Their tapered construction enables them to handle the heavy thrust loads as well as radial loads.

No other bearing gives you all the advantages of Timken tapered roller bearings. Specify them for the steel mill equipment you build or buy. The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable address: "TIMROSCO".

TIMKEN
TRADE-MARK REG. U. S. PAT. OFF.
TAPERED ROLLER BEARINGS

NOT JUST A BALL ○ NOT JUST A ROLLER ⬭ THE TIMKEN TAPERED ROLLER ⬭ BEARING TAKES RADIAL ◫ AND THRUST →◫← LOADS OR ANY COMBINATION →✳←

Every Foundryman

SHOULD READ THIS REPORT!

A Review of One of the Most Outstanding Contributions to the Solution of Cupola Problems

40 years ago, A. W. Belden wrote a paper that has stood the test of time and continues to be an outstanding contribution to our knowledge of the composition of the gases and distribution of temperature in the melting zone of a cupola. This paper has assumed new importance in the light of more recent information on the behavior of foundry cupolas and is reviewed by H. W. Lownie, Jr., Battelle Memorial Institute. Containing graphic presentations and complete analyses, this report will help foundrymen understand many troubles encountered from "low beds" and "oxidized iron". *Write for this informative 6-page report today . . . ask for free bulletin FO-9.*

WHITING CORPORATION

15601 Lathrop Avenue, Harvey, Illinois

Write for these other Whiting Bulletins:

"How To Make Your Cupola Operation More Efficient" **FO-1**
"Tips on Improving Cupola Charging" **FO-2**
"Hot Blast" **FO-3**
"Facts on Duplexing" **FO-4**
"Here's How To Save Melting Fuel" **FO-5**
"The Electric Furnace In the Iron Foundry" **FO-6**
"Cupola Blast Control" **FO-7**
"Suggestions for Solving Some Cupola Operation Problems" . **FO-8**

NOT JUST A ROLLER — THE TIMKEN TAPERED ROLLER BEARING TAKES RADIAL AND THRUST LOADS OR ANY COMBINATION

THE IRON AGE

Editorial, Advertising and Circulation Offices, 100 E. 42nd St., N. Y. 17, N. Y. Oxford 7-3400

GEORGE T. HOOK, Publisher

TOM C. CAMPBELL, Editor

EDITORIAL STAFF

Managing Editor George F. Sullivan
News-Markets Editor Wm. V. Packard
Technical Editor E. C. Beaudet
Asst. Technical Editor W. G. Patton
Machinery Editor E. J. Egan, Jr.
Metal Finishing Editor J. J. Obrzut
Metallurgical Editor W. D. Latiano
Associate Editors: H. W. Van Camp, R. L. Hatschek, W. B. Olson, G. G. Carr, E. C. Kellogg; Art Director: Carl Cerminaro; Regional Editors: K. W. Bennett, Chicago; R. D. Raddant, Detroit; Robert M. Lorz, Cleveland; J. B. Delaney, Pittsburgh; T. M. Rohan, San Francisco; G. H. Baker, A. K. Rannells, R. M. Stroupe, Washington; Editorial Assistants: L. Brass, M. Perrone, C. M. Markert, J. Dangler; Correspondents: F. L. Allen, Birmingham; N. Levenson, Boston; R. M. Edmonds, St. Louis; James Douglas, Seattle; J. R. McDowell, Los Angeles; F. Sanderson, Toronto; F. H. Harley, London, England; Chilton Editorial Board: Paul Wooton, Washington representative.

BUSINESS STAFF

CHARLES R. LIPPOLD
Director of Advertising Sales

Production Manager B. H. Hayes
Director of Research Oliver Johnson
Circulation Mgr. William M. Coffey
Promotion Manager James A. Crites
Asst. Dir. of Research Wm. Laimbeer

REGIONAL BUSINESS MANAGERS

Chicago 2.....S. J. Smith, T. H. Barry
1 N. LaSalle St. Franklin 2-0293
Cleveland 14.....Robert W. Watts
1016 Nat'l City Bk. Bldg. Main 1-2263
Columbus 15, Ohio....Harry G. Mumm
LeVeque-Lincoln Tower Main 3764
Detroit 2.....Peirce Lewis
103 Pallister Ave. Trinity 1-3120
Los Angeles 28.....R. Raymond Kay
2420 Cheremoya Ave. Holy'd 7-0741
New York 17...C. H. Ober, C. T. Post
100 E. 42nd St. Oxford 7-3400
Philadelphia 39.....B. L. Herman
56th & Chestnut Sts. Granite 4-5600
Pittsburgh 22.....J. M. Spackman
1502 Park Bldg. Atlantic 1-1831
W. Hartford 7.....Paul Bachman
62 LaSalle Rd. Adams 2-0486
England .....Harry Becker
111 Thorley Lane, Timperley, Cheshire

OTHER EDITORIAL OFFICES

Los Angeles 28...2420 Cheremoya Ave.
San Francisco 11.....24 California St.
Washington 4.....National Press Bldg.

Circulation Representatives: Thomas Scott, James Richardson.

One of the Publications Owned and Published by Chilton Co., Inc., Chestnut & 56th Sts., Philadelphia 39, Pa.

OFFICERS AND DIRECTORS

JOS. S. HILDRETH, President

Vice-Presidents: Everit B. Terhune, P. M. Fahrendorf, G. C. Buzby, Harry V. Duffy; William H. Vallar, Treasurer; John Blair Moffett, Secretary; George T. Hook, Maurice E. Cox, Tom C. Campbell, Frank P. Tighe, L. V. Rowlands, Robert E. McKenna, Irving E. Hand, Directors.

Indexed in the Industrial Arts Index and the Engineering Index.

Society of Business Magazine Editors

Controlled Circulation Audit

National Business Publications

Our Western Hemispheric Friends

THE Government is now trying to do something about our relations with our Latin American neighbors. There was a time when, with one exception, they loved us. They loved us despite the actions of visitors from the United States and despite the disposition of many to look down their noses at them.

Canada has not escaped that condescending attitude either. This is no attempt to build up a case for those Americans who are always pointing to American shortcomings. It is an attempt to show in a simple way that our troubles with our friends to the South and North are not complex.

What our government does or doesn't do can be undone by our people's actions and their provincial attitude. Most of the misunderstandings with our much needed friends in Canada and in South America come from our attempt to have them do things as we do them.

None of this simple stuff comes to light because neither the Canadians nor the Latin Americans make public their true feelings about us. Some influential Americans claimed it was a bluff by Canada when she said she would build the St. Lawrence Seaway without our help. This attitude lost us many friends. Canada some day will be an arsenal of raw materials for the United States—and a bulwark against an atomic attack upon us. We need her as much or more than she needs us. When we visit her country let's be a little more humble.

When an American looks at a Brazilian industrialist and says, "This plant is quite old, isn't it? Your methods are somewhat similar to ours of many years ago," it does not make friends. Especially when that industrialist had on order with American industrialists—for more than 2 years—a modern plant. It was held up because some U. S. businessmen had always looked upon Brazil as a dumping ground when business was bad at home.

Our major troubles with our Latin American and Canadian friends come from a thoughtless attitude on the part of industrial, congressional and civilian visitors or writers. Our government could gain better relations abroad by propagandizing us at home on how to act abroad. This would pay as well as bank loans, commissions and diplomatic twaddle. After all our hemispheric friends are as close to us as Europe or Asia—and in the final pinch we will need them very much.

Tom Campbell

Editor

NEW BAKER "Yardloader"
TRADE-MARK

4000 LB. GAS FORK TRUCK COSTS ONLY $2985.00

Priced about 25% under any other gas trucks in its capacity, the Yardloader now brings cost-saving fork truck operation within the reach of practically every company with yard-handling problems. Travel speed approaching 14 miles per hour, large pneumatic tires, exceptionally high ground clearance and oscillating trail axle make it the ideal truck for outdoor service over large unimproved or semi-improved areas.

Heavy-duty industrial engine of proven make, 4-speed transmission and extra-heavy drive axle assure ample power for top performance under any conditions. Hydraulic lift to 122 inches, automotive-type steer, convenient controls and excellent driver visibility are a few of the features contributing to safety and ease of operation.

Get all the facts—and save up to $1000.00 on your next gas fork truck.

Send in this coupon today.

THE BAKER-RAULANG COMPANY
1227 West 80th Street • Cleveland 2, Ohio

The Baker-Lull Corporation • Subsidiary, Minneapolis, Minn.
Materials Handling and Construction Equipment

TO THE BAKER-RAULANG CO., 1227 West 80th St., Cleveland 2, Ohio

Please send me information and specifications on the new Baker EY-40 Yardloader which sells for only $2985.00.

Name_____ Title_____

Company_____

Address_____

City_____ State_____

Dear Editor:

Letters from readers

Back to Normalcy

Sir:

Please add this note of appreciation to the many which you must have received, complimenting you on your editorial "Back to Normalcy."

My own organization is this year celebrating its 20th anniversary as an industrial advertising agency. In this important year, if we could write our anniversary message as we are thinking, seeing and feeling, it would most certainly follow the pattern of your splendid editorial. With your consent, we would consider it a privilege to circulate additional copies of your editorial among people of influence within our clients' organizations. If available, would you please have about 200 reprints sent to my attention?

Again, thanks for saying what many of us are trying to state, though less effectively.

H. H. PAXSON
President

Paxson Advertising, Inc.
Benton Harbor, Mich.

We are very glad to send 200 reprints to you.—Ed.

Annual Review Issue

Sir:

We are in receipt of your 99th Annual Review and Forecast Issue dated Jan. 7, 1954, and we note that this does not contain information covering prices, products, capacities, and shipments for the steel industry for the year 1953 as did your Annual Review and Metal Industry Facts Issue dated Jan. 1, 1953.

We are wondering if the above information is contained in another issue which we have not yet received.

W. J. HOLLIDAY, JR.

W. J. Holliday & Co.
Indianapolis, Ind.

You are quite right in assuming that some statistical information which appeared in our 1953 annual did not appear in the 1954 edition. All price information was included in the statistical section of this year's Annual beginning on p. 405; also, most of the basic steel production data. But we did not include steel shipments and steel distribution because complete 1953 data was not available. Steel capacity figures as of Jan. 1, 1954, appeared in the Feb. 4 issue, facing p. 98. The steel distribution and shipment data will be given as a special feature in the April 8 issue.—Ed.

Clay Bonded Blocks

Sir:

In the Jan. 21 issue on the Newsfront page, there appeared the following item: "Expect commercial adaption soon of a clay bonded building block and possibly a face brick . . . ."

Could you send us the names and addresses of researchers and manufacturers at this time?

ANDREW IRONS

Alloy Metals Welding Co.
Detroit

We suggest you contact the Armour Institute, Ceramics Dept., 3350 South Federal St., Chicago 16, Ill. for the manufacturers' names.—Ed.

Missing: Women Engineers

Sir:

The Engineering Society of Cincinnati is interested in obtaining reprints of, or permission to reproduce, the article entitled "Engineers: Women are Missing" which was written by E. C. Kellogg and published in your April 9 issue, p. 79.

For the past several years, the Engineering Society of Cincinnati has had a vocational guidance committee whose purpose is the counselling of high school students about the opportunities in the field of engineering and the personal attributes of most engineers. This year the committee is trying to encourage more girls to study engineering. Folders of informative material are prepared for all high school students who attend our annual symposium. In the folders for girls, we would like to include reprints or reproductions of your article, because we feel that it is a very frank and brief summary of the facts regarding women in engineering. In view of our expected attendance, thirty reprints of the article would probably be enough.

BETTY LOU BAILEY

Engineering Society of Cincinnati
Cincinnati, Ohio

We have no reprints, but we're glad to give you permission to reproduce the article. —Ed.

Thermometers

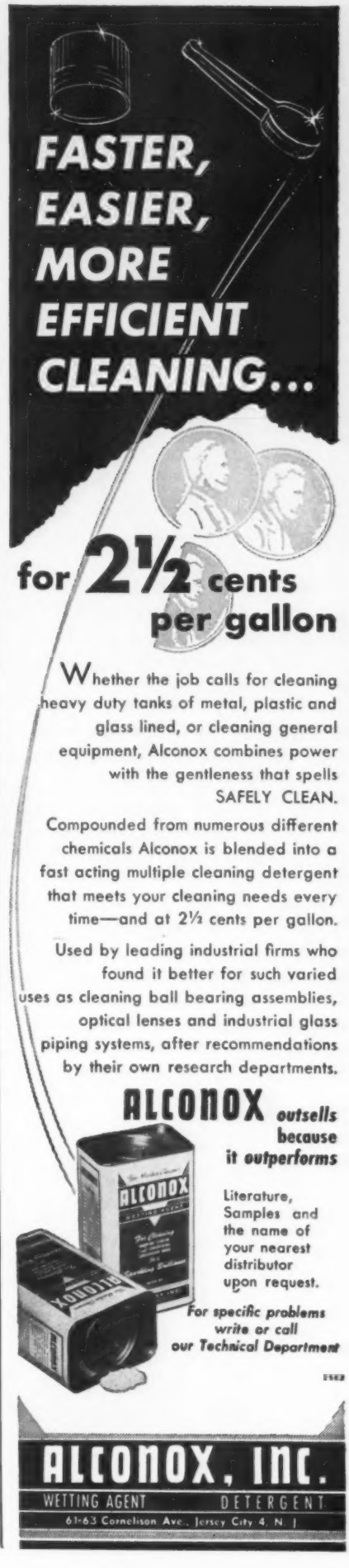
Sir:

The Dec. 17 issue, Newsfront page, states that special paints are available which serve as thermometers and which show a temperature change from 50° to 278° C. Can you advise where such paints might be obtained?

G. F. WHITNEY
Plant Engineer

The Collins Co.
Collinsville, Conn.

Further information about these special paints may be obtained from Thermocolor, Inc., Harriman, Tenn.—Ed.


FASTER, EASIER, MORE EFFICIENT CLEANING...
for 2½ cents per gallon
Whether the job calls for cleaning heavy duty tanks of metal, plastic and glass lined, or cleaning general equipment, Alconox combines power with the gentleness that spells SAFELY CLEAN.
Compounded from numerous different chemicals Alconox is blended into a fast acting multiple cleaning detergent that meets your cleaning needs every time—and at 2½ cents per gallon.
Used by leading industrial firms who found it better for such varied uses as cleaning ball bearing assemblies, optical lenses and industrial glass piping systems, after recommendations by their own research departments.
ALCONOX outsells because it outperforms
ALCONOX
Literature, Samples and the name of your nearest distributor upon request.
For specific problems write or call our Technical Department
ALCONOX, INC.
WETTING AGENT DETERGENT
61-63 Cornelison Ave., Jersey City 4, N. J.

for heat treating bars and tubes

ihp *

SAVES SPACE

Heating bars in a furnace one-third shorter than the length of the bar itself is typical of Selas *Improved Heat Processing.* One company using a 14-foot high-speed radiant, gas-fired furnace doubled its previous output rate in tons per hour of 22-foot bars.

Selas **ihp*** is in use for bars and tubes of stainless, carbon, or alloy steel and non-ferrous metals . . . for hardening, drawing, normalizing and annealing. Treating metals at mill production speeds, *Improved Heat Processing* methods save furnace and storage space, plus many dollars in handling costs.

Every bar is given the same uniform treatment, resulting in consistent metallurgical results not only from end to end of any one bar, but also from bar to bar.

Numerous magazine articles attest to the efficiency of Selas methods. Ask for printed material describing results obtained by companies with problems similar to yours.

***Improved Heat Processing**

SELAS

CORPORATION OF AMERICA

PHILADELPHIA 34, PENNSYLVANIA

Heat Processing Engineers for Industry — Development • Design • Manufacture

Fatigue Cracks

by William M. Coffey

Executives

As everybody knows, an Executive has practically nothing to do . . . except decide what has to be done . . . tell somebody to do it . . . listen to reasons why it should not be done . . . why it should be done by somebody else . . . why it should be done a different way . . . to prepare arguments in rebuttal that shall be convincing and conclusive.

To follow up to see if the thing has been done . . . to discover that it has not been done . . . to inquire why it has not been done . . . to listen to excuses from the person who should have done it . . . and did not do it . . . to follow up a second time to see if the thing has been done . . . to discover . . .

That it has not been done correctly . . . to point out how it should have been done . . . to conclude that as long as it has been done . . . it may as well be left as it is . . . to wonder if it is not time to get rid of a person who cannot do a thing correctly . . . to reflect that the person at fault has a wife and seven children . . . and that certainly . . .

No other executive in the world would put up with him for another moment . . . but that . . . in all probability . . . any successor would be just as bad . . . and probably worse . . . to consider how much simpler and better the thing would have been done if he had done it himself in the first place . . . to reflect sadly that if he had done it himself . . .

He would have done it right in twenty minutes . . . but that as things turned out . . . he himself spent two days trying to find out why it was that it had taken someone else three weeks to do it wrong . . . and then realize that such an idea would strike at the very foundation of the belief of employees that . . . executives have nothing to do.

Courtesy Dun's Review.

February

We almost forgot to tell you that this is the month of February and the following days you may use for holidays:

Feb. 4-13	National Kraut and Frankfurter Week
Feb. 7-13	National Peanut Week
Feb. 14-21	Jaycee Week
Feb. 15-22	National Cherry Week
Feb. 20-27	National Sew and Save Week (*tentative*)

February itself is not only Butter Frostings Month, but Liquor Large-Size Month as well. March will be One-Dish Meals with Cheese, Cherry, Vanilla Ice Cream Month.

Outside The Iron Age

How we get around. Told you some time back how *The Daily Worker* played havoc with our story on industrial Red China. Discovered this week that recently we also appeared in the *Living Church, The Layman's Association Bulletin,* and *America, National Catholic Weekly Review.* How's that for a 180° turn? We think it would have done *The Daily Worker's* subscribers (if any worthy of the name) more good to have read what these fine church magazines reprinted from THE IRON AGE. They borrowed one of Tom Campbell's editorials—all about souls.

Just Thrown In

All elephants traveling by air, according to K.L.M. Royal Dutch Airlines, are accompanied by a live hen which makes its home on the elephant's head during the trip. Elephants do not like to travel alone and the feathered companion has a calming effect on the truculent beast. Perhaps we should put a chicken on that executive we talk about next door.

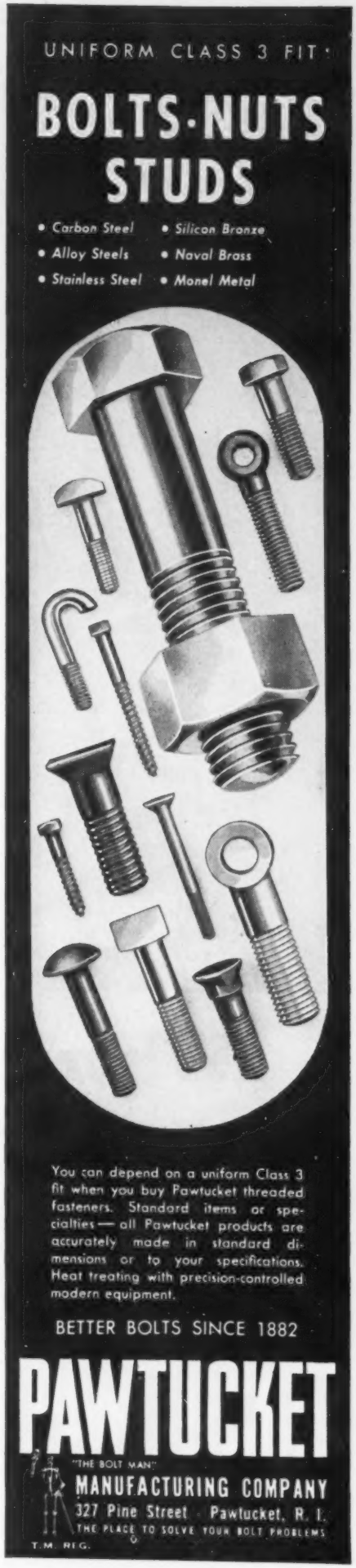
Puzzlers

The Rose Puzzler—answer: If the winner's rose had been white, both of the non-winners could have easily deduced that their roses were red, since if either were white, the other non-winner would immediately say his rose was red. Since neither non-winner spoke immediately or after a little deliberation, the winner concluded that his rose could not be white—must be red. *Voila!*

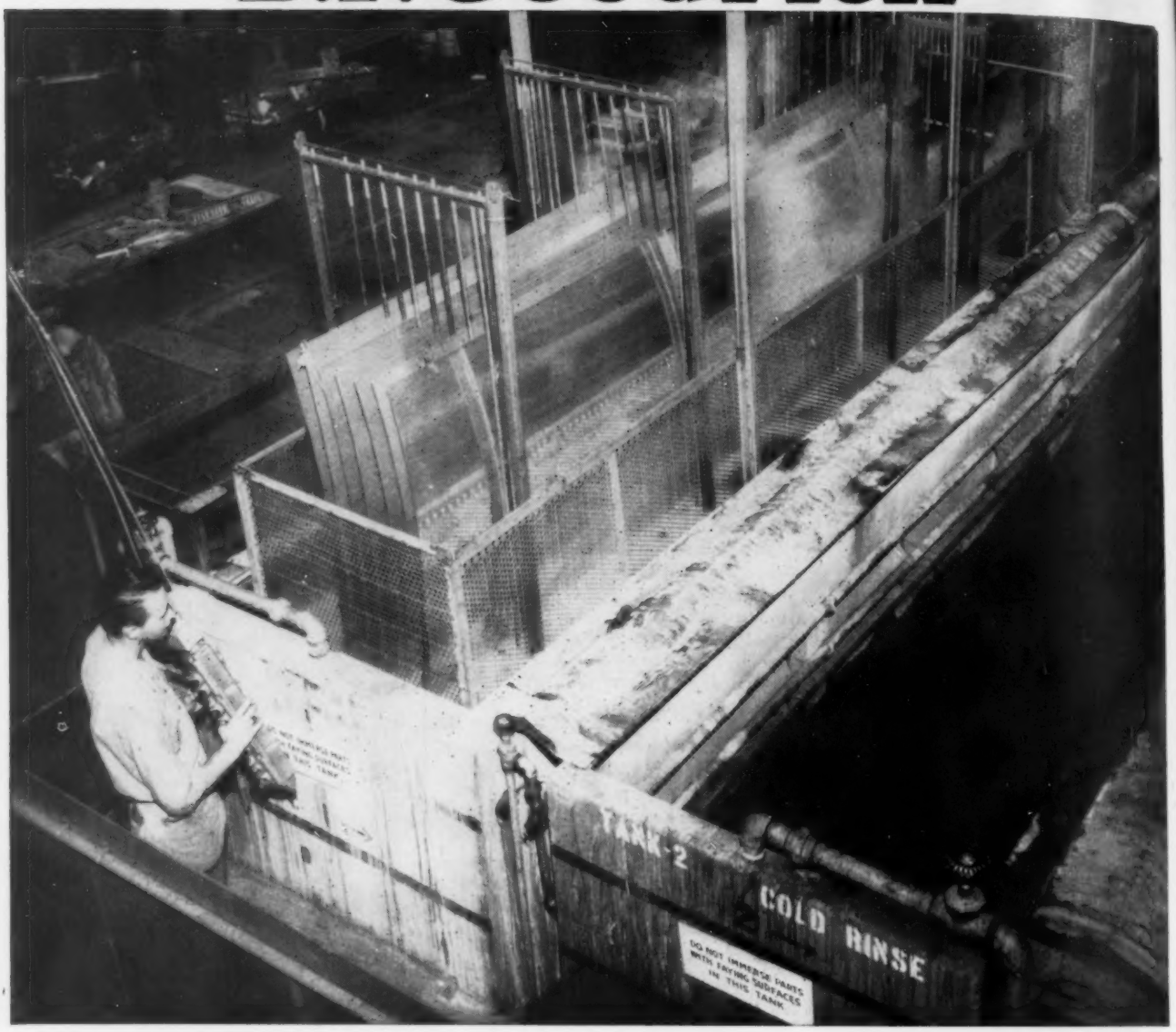
The winners: William J. Leahy, W. F. Welch, Stanley A. Orr, Edwin Beeby, J. J. Brugman, E. A. Schwab, John W. Cluck, Robert A. Larson and Mr. Rice.

New Puzzler

On a piece of paper nine dots are arranged in a square, three on each side and one in the middle. Can you draw four straight lines without removing the pencil from the paper or retracing a line, in such a way that a line passes through each dot?


UNIFORM CLASS 3 FIT
BOLTS·NUTS
STUDS
• Carbon Steel
• Alloy Steels
• Stainless Steel
• Silicon Bronze
• Naval Brass
• Monel Metal
You can depend on a uniform Class 3 fit when you buy Pawtucket threaded fasteners. Standard items or specialties — all Pawtucket products are accurately made in standard dimensions or to your specifications. Heat treating with precision-controlled modern equipment.
BETTER BOLTS SINCE 1882
PAWTUCKET
"THE BOLT MAN"
MANUFACTURING COMPANY
327 Pine Street · Pawtucket, R. I.
THE PLACE TO SOLVE YOUR BOLT PROBLEMS
T.M. REG.

RESEARCH KEEPS **B.F.Goodrich** FIRST IN RUBBER



Where airplane skeletons swim in acid

A typical example of B. F. Goodrich product development

BEFORE the wings and body of an airplane can be covered, the frame must be cleaned of the slightest speck. Big tanks like these were used, filled with acids that ate off scale and got the parts ready to be painted.

A faster process was developed but it had to use acids so strong that they would eat through wood and metal tanks. In fact, not even rubber tank linings could stand up against these acids.

An engineer thought of Koroseal, the material developed by B. F. Goodrich that stands practically all acids. It was tried and worked perfectly—the two tanks in the picture are already lined with it. Koroseal made the new process possible, speeding up this vital step in airplane making as much as 50%.

Koroseal flexible material is but one example of the product development and improvement that is always going on at B. F. Goodrich. Every product that B. F. Goodrich makes—V belts, conveyor belts, hose and many other things—is constantly being studied by practical engineers to see how it can be improved from the user's standpoint, how it can be made to last longer and do a better job.

The tanks in the picture were lined by The Barber-Webb Company for Lockheed Aircraft Corp.

To take full advantage of B. F. Goodrich practical research, call your BFG distributor, or write to *The B. F. Goodrich Company, Dept. M-165, Akron 18, Ohio.*

B.F.Goodrich
INDUSTRIAL PRODUCTS DIVISION

the Iron Age
FOUNDED 1855

THE IRON AGE Newsfront

BONDED BORIDES of zirconium, chromium and molybdenum may hold the answer to several problems involving high temperatures. They have high melting points, good high temperature strength, but slightly less impact strength than cast superalloys. Molybdenum borides show promise as a cutting tool material.

CONCRETE OUTLINES FOR EXECUTIVE DEVELOPMENT are getting more emphasis from industrial planners. Many wideawake managements have set up committee review systems for setting goals and following progress of promising executives.

SEVERAL FULL-SIZED NUCLEAR POWER PLANTS may be built and in operation by industry before the Atomic Energy Commission can evaluate efficiency of such plants. Eight teams of industrial companies are studying possibilities of private nuclear power. AEC hints others may soon follow Westinghouse in building facilities.

EIGHT-CYLINDER POWERED CARS outsold 6-cylinder models for the first time in automotive history in 1953. The trend will continue with more 6-cylinder models to be scrapped by 1955 although no 6-cylinder engine was completely dropped for 1954 models.

GUARANTEED ANNUAL WAGE will add zest to steel negotiations this summer. United Steel Workers are playing up the issue in union publication and meetings. But betting still favors emphasis on wages, health and welfare.

EASIER CREDIT FOR USED CARS is being looked for by the auto industry to help out in the selling job that faces dealers in 1954. Tight financing was blamed by many dealers for the comparatively slow used car market in past months.

PRESENT SPREAD BETWEEN U. S. EXPORTS AND IMPORTS of steel is expected to grow in the competitive world market. Exports last year were 2.7 million tons; imports, 1.7 million tons. But steel exports as a whole won't become as big a part of our market as formerly, present figures tend to indicate.

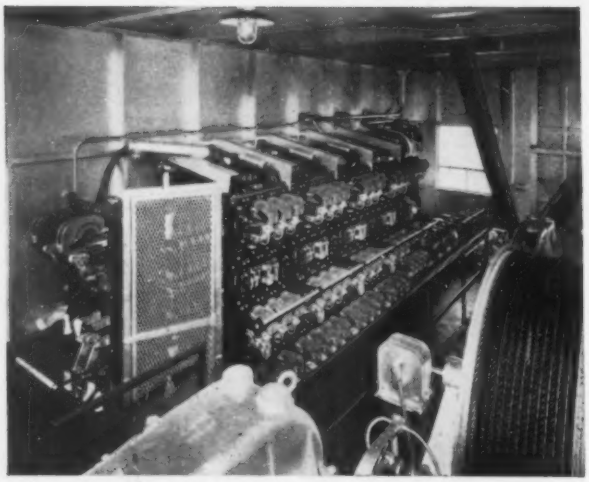
DECISIONS ON ACCOUNTING procedures can make the difference in profit and loss statements. Faced with relatively high earnings and taxes some firms are putting more aside for such things as pensions, eyeing purchase of companies with large loss carryovers.

PROBLEM OF FINDING HIGH TEMPERATURE GREASE has been studied from many angles. In one recent study of 101 silicone oil greases containing thickeners, a life of 650 hours at 450° F was obtained using p-carboxydiphenylurea thickening agent.

A NEW ARMY TRANSPORT CARGO CRAFT will be tested soon. A 50-ft hull, constructed of plastic sections to be assembled by unskilled workers at spot of use, will have an 18-in. draft. It's driven by twin screws, will carry cargo, push small barges.

NATIONAL PRODUCTION OF POLYETHYLENE will jump from an estimated 153 million lb in 1953 to about 540 million lb in 1955, some chemical producers predict. One new firm looks for a $17 million annual sales on projected capacity of 45 million lb.

KING SIZE Barge-Crane shown with 62½-Long Ton Test Load on 50-Long Ton Floating Crane. Built by Wiley Mfg. Co., Port Deposit, Md.



View above shows EC&M Crane Protective Panel at left, row of EC&M Magnetic Controllers with the well-known LINE-ARC Contactors and TIME-CURRENT Relays, and EC&M Cam Master Switches (arranged for remote operation) at the extreme right. Adjacent to the hoist drum in the foreground is an EC&M Rotating Cam Limit Switch and beyond this an EC&M Type WB Brake partially shows.

Wiley Manufacturing Company takes advantage of the inherent safety and quick response in operation of series-wound brakes and the simplicity and excellent characteristics of series motors for the main, auxiliary and whip-hoists and luffing motion of their barge-cranes.

The EC&M Wright Dynamic Lowering Circuit Controller used on these motions prevents heavy peak loads on the Diesel Generator, because:

(1) ALL line current passes through the brake coil on the first point lowering, giving quick brake release with minimum power.

(2) EC&M TIME CURRENT Relays retard the rate of acceleration of heavy loads in hoisting, yet allow faster operation with light loads. And for rotating the crane, TIME-CURRENT Relays govern the rate of acceleration of the swing motion with topmost smoothness.

Specify EC&M Control to get these exclusive advantages.

ETK1

THE ELECTRIC CONTROLLER & MFG. CO.

2698 East 79th Street ★ Cleveland 4, Ohio

There's More Nickel but Not for Civilians

Free World nickel output will be upped 13 pct from '53 . . . Increase will be for military, stockpile use . . . Civilian allotment already down—By *R. L. Hatschek.*

Free World nickel production in 1954 is expected to be about 13 pct higher than last year. But supply situation for civilian goods producers in the U. S. is about as bleak right now as it's ever been. Reason is stepped up government buying for stockpile and military use.

High optimism following decontrol of nickel end uses last fall turned to bitter disappointment with the New Year as civilian allocations were slashed to accommodate a substantial increase in stockpile purchases.

More Nickel Cuts Coming

Platers, who faired poorly under controls, experienced a pickup at year end—getting about 1.4 million lb of nickel in December. This was trimmed as much as 28 pct in January because of the 1.5 million-lb-per-month hike in stockpiling.

General cut in overall civilian supplies in January was about 15 pct. February shipments to industry are about the same as last month, perhaps a bit lighter. And there's a strong possibility that March allotments may be sliced as much as in January.

Most For Stockpile

Business & Defense Services Administration, however, estimates non-military deliveries in 1954 will approximately equal 1953. Agency says a review of the present stockpiling goal is to be completed by end of the current quarter. Supply-demand situation will also get frequent looksees by the government.

Decision on the quick-action stockpiling of nickel and several other metals and materials was announced by Office of Defense Mobilization in December. For nickel, it means the stockpile will get all but a small portion of nickel now being produced with government aid.

This includes most of the production of the government-owned Nicaro plant in Cuba which has a monthly capacity of 2.3 million lb. Following anguished cries from manufacturers, ODM relented somewhat, and allotted about 500,000 lb of Nicaro's January production for February delivery to civilian consumers. But this will probably be the last heavy shipment from the plant to this market for a considerably long time.

Civilian Users Won't Get More

Another 2-million-ton monthly boost to the U. S. stockpile started late in January with the initial shipment by International Nickel Co. from its most recently completed expansion. New mining and refining techniques made possible a contract with the U. S. for delivery of 120 million lb over a 5-year period ending in 1958.

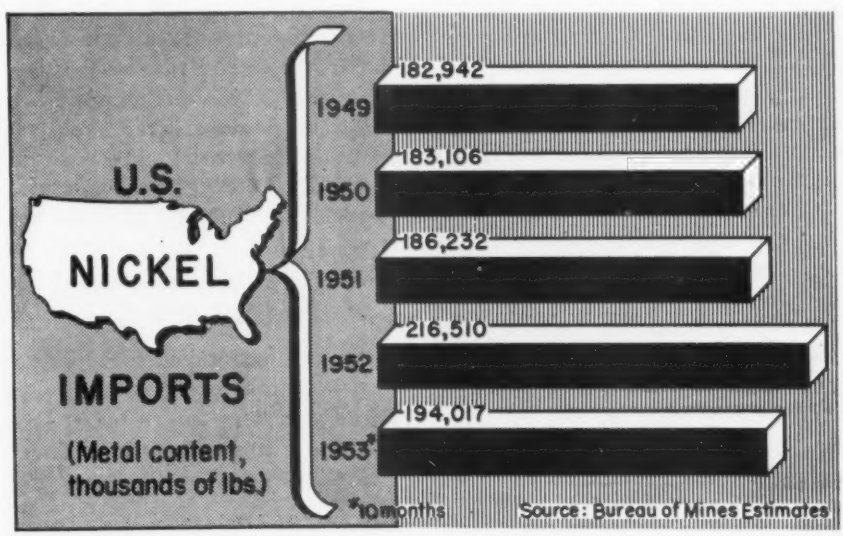
Whether this supplants or supplements the 1.5-million-ton hike made in January is unknown. But with a possible further cut facing civilian consumers next month, it seems to be an addition.

Total U. S. shipments, including both defense and non-defense, averaged over 18.5 million lb per month last year. At least half of this went for stockpiling and military production and it's pretty certain the 1954 percentage will increase considerably. At best, according to the BDSA estimate, civilian users will get no more than they did during nickel lean 1953.

Plan Pilot Plant

Elsewhere on the expansion front, General Services Administration is holding talks with Freeport Sulphur Co. for construction of a pilot plant in the U. S. to test a new chemical process for extracting both nickel and cobalt from Moa Bay, Cuba, ore.

Freeport is already under way an a smaller plant and reports are the firm would go ahead on a full-



Expansion

STEEL: Build First U. S. Oxygen Units

McLouth Steel installing first oxygen process steelmaking units in U. S. . . . Meets comprehensive village air pollution laws . . . Plan $105 million expansion—By *R. D. Raddant.*

The McLouth Steel Corp. $105 million expansion program will pass two important milestones in U. S. steelmaking history.

The expansion program now underway at the Village of Trenton, in Detroit's "down river" industrial area, will include the first commercial oxygen process steelmaking units and will provide probably the most complete effluent control program in the U. S.

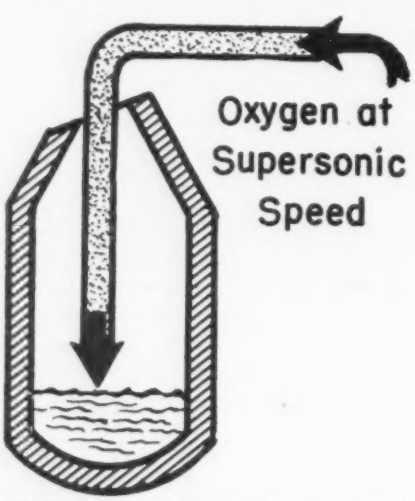
Will Control Fumes

The village issued permits last week for three 35-ton oxygen process steelmaking units as well as permits for two 200-ton electric furnaces. These units, as well as ore docks, a blast furnace and increased rolling capacity will give the mill a capacity of nearly 1 million tons.

The increased capacity will be tied in with a $1 million smoke and fume control program that will dispose of all effluent from the new furnaces and converters and will be extended to the existing four electric furnace units as well.

Originally McLouth intended to use bessemer converter units to integrate its steelmaking operations, but village atmosphere control ordinances prevented either openhearth furnaces or bessemer converters.

As a result, McLouth officials chose to look into the new oxygen steelmaking process that was developed in Europe and only recently imported for the Dominion Foundries & Steel, Ltd., Hamilton, Canada.



OXYGEN steelmaking done in simple vessel.

The oxygen process was originally developed to produce low nitrogen steel. In a simple explanation, a solid bottomed vessel similar in shape to a bessemer converter is employed. High purity oxygen is blown onto the surface of the bath at supersonic speed.

The oxygen process preserves the main advantages of the bessemer process—low capital cost and rapid production. At the same time it overcomes the main American objection to bessemer steels—high nitrogen content.

With nitrogen content sharply reduced, the steel is not subject to embrittlement resulting from strain age hardening. It can be readily drawn, worked, formed. Drawing quality of steel thus produced has been found to be at least as good as openhearth steels.

Exact method by which McLouth will utilize the oxygen process has not yet been decided. However, plans are far enough along to go ahead with construction of the basic units.

The three 35-ton units will be

Special Report

Continued

scale commercial plant if it could get a government purchase contract and accelerated amortization on the facilities. GSA's position is that it believes more pilot work is desirable to increase efficiency and economy. That's the reason for negotiations on the 50-ton-per-day pilot operation.

Current estimates are that Moa Bay reserves would yield 30 million lb of nickel and 3 million lb of cobalt annually for 30 years.

Major bugaboo in the supply situation is that recovery of nickel content of alloy scrap is not yet commercially feasible. Jet engines use such high proportions of nickel for heat resistance that, as one plater put it, "You could almost use a scrapped jet engine as a plating anode."

Trouble is in the "almost"—it would cost an estimated $2 or more per lb to recover that nickel. Current Air Force procedure is to scrap jet engines after about 500 hours of operation. This means a terrific stockpile of "almost anodes" is piling up and right now it would be practically prohibitive costwise to reclaim the nickel.

No Duplication

But at least three firms are at work on the problem with Air Force as a very interested spectator. The companies are Hall Chemical Co., Shepherd Chemical Co., and Vitro Corp.

Hall and Shepherd have found out how to handle alloys not ordinarily soluble, according to informed sources in Washington. The key was to find proper catalysts for components of the alloys and then extract them by selective precipitation.

The three firms aren't duplicating each other's efforts: Hall is working mostly with "super" or high temperature alloys while Shepherd is primarily concerned with magnetic alloys. Vitro is working on a related project.

Where does this leave civilian goods manufacturers, particularly platers? As one remarked, "If we take another cut in March I might take a vacation."

installed in a battery adjacent to the new blast furnace. Plans show they will be set below grade level and will be charged from the top from the hot metal ladle.

Above the converter, an oxygen lance is suspended from a jib crane and can be lowered into the ladle for the oxygen blast of the charge. Each vessel is 22 ft high with an inside diameter of 10 ft 8 in. and a volume of 400 cu ft.

Plans for an oxygen plant have not yet been submitted, but this unit will have to be constructed.

Hood Traps Fumes

Entire expansion was tied in with a smoke and fuel abatement program which ... ved consultation by both the village and the company with experts from other steelmaking areas and with government smoke control experts.

Over each of the oxygen converter units will be suspended a huge hood which is lowered over the top of the converter as the process gets under way. Fumes and smoke from the ladle pass through a spark arrester or flame trap box, then into a gas washer and finally into disintegrators. Effluent from the electric furnaces will also be trapped and directed into the same three disintegrators and two gas washers that will be constructed.

Add Water Purifier

Another problem faced by the company was that of water pollution in the Detroit River. The plant lies on the west side of the river, but with a narrow channel separating it from nearby Grosse Ile. This problem will also be solved by the construction of a clarifier to dispose of waste from the plant operations. Ore carriers will probably approach the new docks from the south, rounding the southern tip of the island and approaching from downstream.

As a strictly electric operation, McLouth has had to rely entirely on scrap for its steelmaking. With ore docks, a blast furnace and the converters, it expects to use a furnace charge of 60 pct hot metal to 40 pct scrap.

STUD WELDING pin in position. Note Foamglas blocks in background.

Stud Welding Speeds Insulation

How do you stick a quarter million 2½-in. steel pins into a 225-ft diameter airtight steel ball? That question faced Lewis & McDowell, Inc., whose task was to insulate the monster submarine reactor testing sphere near West Milton, N. Y.

General Electric Co. will use the sphere for testing a prototype Submarine Intermediate Reactor, the type slated for use in the Navy's proposed atomic sub *Sea Wolf*. First nuclear powered submarine, the *Nautilus*, uses a Submarine Thermal Reactor (See THE IRON AGE, Jan. 21, p. 47).

Purpose of the pins is to hold the 2-in.-thick Foamglas insulation to the shell.

Stud welding seemed to be the best answer and six men armed with Nelson semi-automatic stud welding guns started at the top and worked down, leading the insulating crew. Work went at a speedy pace in spite of the frequently awkward spherical shape.

Power for the arc welding operation was supplied by three Nelwelder battery units on the ground, one for each two guns. Cable lengths up to 350 ft were needed to reach the top.

Other members of the 60-man workforce followed the welders impaling Foamglas blocks on the pins. After installation of stainless steel speed clips to secure the insulating blocks, the stud tips were snipped off and the whole works was covered with glass fabric. This was followed by a weatherproofing mastic coating.

Sphere was built by Chicago Bridge & Iron Co. under subcontract from Rust Engineering Co. Insulation contractor for the job was Lewis & McDowell, Inc., New York.

Time saved in applying the Foamglas block by stud welding has been estimated at more than 50 pct.

SPHERE nearing completion is shown with scaffolding in place for installing insulation.

Heavy Equipment Industry Confident

Builders, distributors expect good year . . . Rely on replacement need, deferred projects . . . Bolstered by government's standby public works program—By W. V. Packard.

Unexpectedly strong optimism prevailed at the 35th annual meeting of Associated Equipment Distributors in New York last week.

In programmed speeches and forums, and in the corridors of the Waldorf Astoria construction machinery distributors and manufacturers expressed confidence. Consensus was: Like other industries they face serious problems. But there's plenty of heavy construction business ahead.

Adjustment Is Temporary

Some of this future business is in the form of pent up or deferred projects, some is geared to replacement needs. Much is based on faith in future growth of the economy.

But whatever the source, the industry is predominately optimistic. Few of the 2300 delegates from the U. S. and Canada were worried about the current economic adjustment.

Their attitude seemed to be that the transition period had to be dealt with and that we might as well get it over with. General view was the adjustment is temporary, will have limited longterm effect.

Travel on Momentum

The industry's outlook has been bolstered by Administration's statement that it will launch a public works program if the economic dip proves more severe than anticipated.

Moreover, economic adjustments that have already been painful to some industries, have so far had a much more moderate effect on heavy construction.

Admittedly this industry is traveling partly on momentum. But while military projects are tapering off somewhat, they are in many cases being replaced by deferred civilian projects such as roads, dams, bridges, and civic and institutional building. Outlook for this type construction has undiminished luster.

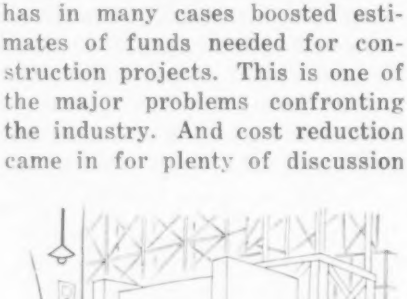
No New Business Rush

Many large civilian construction projects were held in check by the Korean war and the defense program. Some were restricted by law, some by material shortages, and some by psychological reaction.

It is natural that end of the shooting, lifting of controls, and easing of material supply would bring about release of some projects that have been locked up tight for a long time.

But there hasn't been a rush of new business. In addition to the time lag resulting from need to take out pigeon-holed blue prints, dust them off, and bring them to the action stage, there has been a good deal of caution.

High cost of labor and materials has in many cases boosted estimates of funds needed for construction projects. This is one of the major problems confronting the industry. And cost reduction came in for plenty of discussion at the meetings of the construction machinery manufacturers and distributors.



"Whatever you feel like giving . . . Gardner is getting married, Hansen is going into the Army and I can't make ends meet."

Delegates also gave plenty of attention to their own costs, and at a special session distributors discussed possible methods of cost savings through management control.

Store Construction Backlog

A tremendous heavy construction potential is opening in Canada, according to James W. Halls, president Consolidated Engines & Machinery Co., Ltd., Montreal. He cited uranium and oil in Alberta, aluminum in British Columbia and iron ore in Labrador.

Hugh J. Hush, president, Griffin Equipment Corp., said that aggravating material shortages had disappeared. But there is still a shortage of technically trained leaders to direct heavy construction projects. He expects this problem to remain for some time to come.

George W. Gagel, newly elected president of AED, and president of Machinery & Supplies Co., Inc., Kansas City, pointed out that big corporations were storing up a backlog of construction that could be used to keep the economy going. "There is no solid reason why . . . 1954 should not . . . measure up to another satisfactory year."

AED Elects New Officers

George W. Gagel, president, Machinery & Supplies Co., Inc., Kansas City, is the new president of Associated Equipment Distributors. He succeeds S. John Oechsle, Metalweld, Inc., Philadelphia.

Ray J. Finn, president Bode-Finn Co., Cincinnati, was elected executive vice-president.

Other officers elected include: S. F. Laskey, Northwestern Equipment Co., Fargo, N. D.; L. Miner Doolen, Telford Equipment Co., Lansing, Mich.; R. S. Hamilton, Sheridan Equipment Co., Ltd., Toronto; all vice-presidents; and F. J. Fitzpatrick, Parker-Danner Co., Hyde Park, Mass., treasurer.

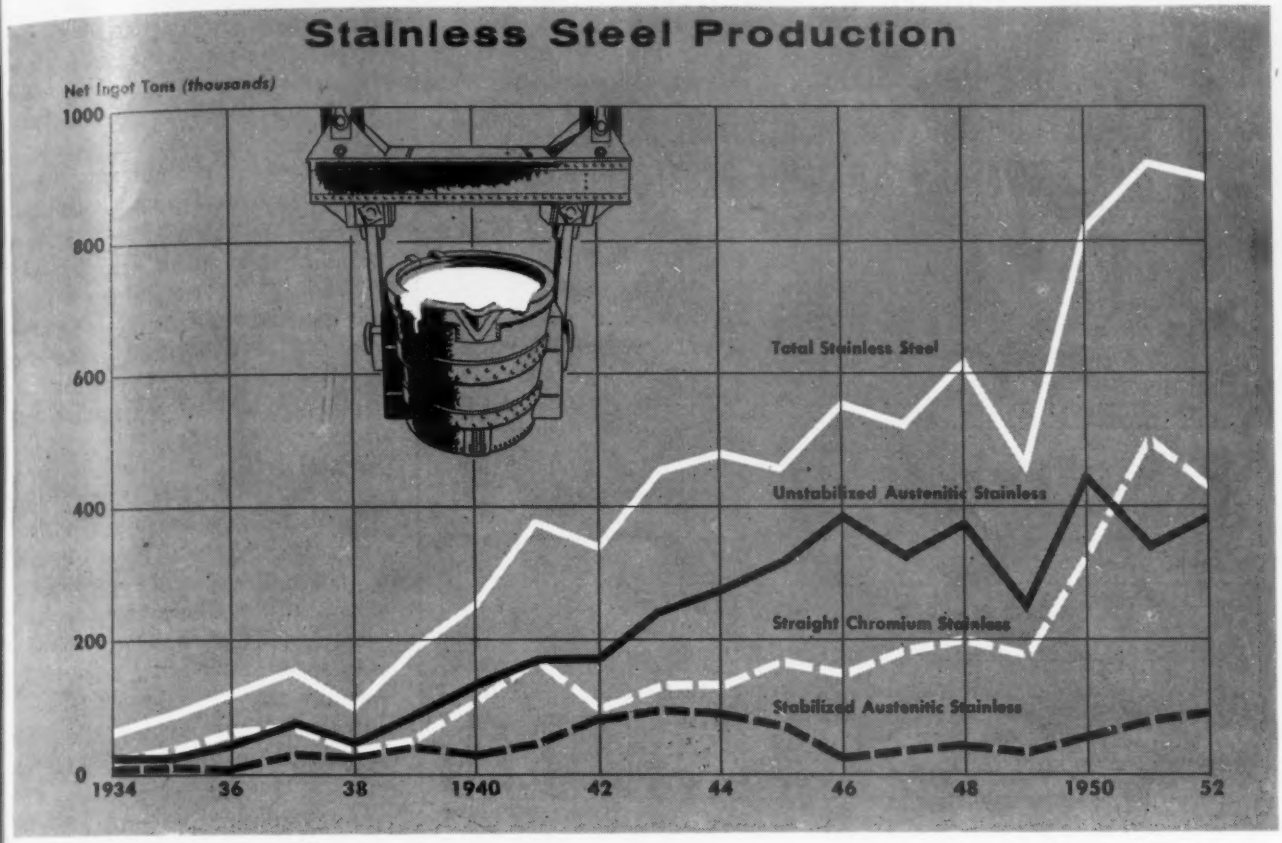


Chart courtesy Allegheny Ludlum Steel Corp.

STAINLESS: Try for Spring Sales Spurt

Mills drive for wider use, new markets . . . Feel inventory correction period over . . . May herald general steel sales rise . . . Stress structural market—By *J. B. Delaney*.

So far the pickup in stainless steel demand is more of a "feel" than an actuality. But if a definite trend for the better materializes, it may be a harbinger of improved demand for all steel products.

Stainless producers say they can prove from past experience that they are the first to feel a slump and the first to come back. This was true, they say, in 1949 and there's no reason to believe it won't happen again.

See Balanced Inventories

But no one is going out on a limb yet. Signs of a pickup are beginning to show, but not enough consumers have climbed onto the bandwagon to create more than hopeful optimism. A strong comeback in automotive buying would turn the trick, but car producers blow hot and cold, depending on their competitive position in the market. And some automakers are in a slump.

Producers hope they are right in assuming that inventory correction by their customers has about run its course. The warehouse picture looks a little better. And scattered rush orders are interpreted to mean that some fabricators have touched bottom on inventory. One producer notes an uptrend in January in demand from a broad range of industries exclusive of automotive.

Push Retail Sales

Being a high cost item in relation to other steel products is a decided handicap to stainless producers in a period of inventory reduction and general business caution. When the order to cut inventory goes out, stainless inevitably is picked on first because its dollar value is higher.

Whether better times are ahead for stainless depends, say producers, on the ultimate consumer of manufactured articles containing their product. And the consumer, they admit, is sitting on his hands. They believe the answer lies in more aggressive salesmanship at the retail level. They feel someone ought to tell the retail salesman the honeymoon is over, that he has got to sell the customer for a change.

Use Trends Up

Long-range outlook for the industry promises to be anything but dull. One producer even has his eye on a share of the carbon steel structural market—and he's not kidding when he says stainless can be used to advantage in numerous structural applications now monopolized by carbon steel producers.

With increased capacity and a slower market, stainless mills also

AMERICAN CHEMICAL PAINT COMPANY

AMBLER CHEMICALS ACP PROCESSES PENNA.

Technical Service Data Sheet
Subject: INDEX OF ACP CHEMICALS FOR METAL PRESERVATION AND PAINT PROTECTION

METAL	OPERATION	ACP CHEMICAL
ALUMINUM	Cleaning	"DEOXIDINE" "DURIDINE" "ACP RIDOLINES AND RIDOSOLS"
	Preparation for Painting	"ALODINE" "DURIDINE" "DEOXIDINE"
	Protection from Corrosion	"ALODINE"
BRASS	Brightening	"ACP BRIGHT DIP"
	Cleaning	"DEOXIDINE" "DURIDINE" "ACP RIDOLINES AND RIDOSOLS"
	Cleaning for Painting	"DEOXIDINE" "CUPROTEK
	Corrosion Prevention	"CUPROTEK"
	Soldering Flux	"FLOSOL"
COPPER, BERYLLIUM, AND COPPER ALLOYS	Brightening	"ACP BRIGHT DIP"
	Cleaning	"DEOXIDINE" "DURIDINE" "ACP RIDOLINES AND RIDOSOLS"
	Cleaning for Painting	"DEOXIDINE" "CUPROTEK"
	Coating Steel with Copper	"CUPRODINE"
	Corrosion Prevention	"CUPROTEK"
	Scale Modification	"RIDOXINE"
	Soldering Flux	"FLOSOL"
	Stripping Copper Coatings	"ACP COPPER STRIPPING SOLUTION"
GALVANIZED IRON, ZINC, AND CADMIUM	Cleaning	"DURIDINE" "ACP RIDOLINES AND RIDOSOLS"
	Corrosion Proofing	"ZINODINE"
	Paint Banding	"ZINODINE"
	Phosphate Coating, in Preparation for Painting	"LITHOFORM"
	Soldering Flux	"FLOSOL"
IRON AND STEEL	Chromate Coating, in Preparation for Painting	"CROMODINE"
	Cleaning	"ACP RIDOLINES AND RIDOSOLS"
	Cleaning for Painting	"DEOXIDINE" "DURIDINE"
	Coating with Copper	"CUPRODINE"
	Drawing and Extrusion	"GRANODRAW"
	Paint Banding	"CROMODINE" "DURIDINE" "GRANODINE" "PERMADINE" "THERMOIL-GRANODINE"
	Paint Stripping	"CAUSTIC SODA AND SOLVENT NO. 3"
	Phosphate Coating, in Preparation for Painting	"DURIDINE" "GRANODINE" "PERMADINE" "THERMOIL-GRANODINE"
	Phosphate Coating, to Protect Friction Surfaces	"THERMOIL-GRANODINE"
	Pickling with Inhibited Acids	"RODINE"
	Rust Prevention for Unpainted Iron	"PEROLINE"
	Rust Proofing	"PERMADINE" "THERMOIL-GRANODINE"
	Rust Removal—Brush, Dip, or Spray	"DEOXIDINE"
	Soldering Flux	"FLOSOL"
MAGNESIUM	Cleaning	"DURIDINE" "ACP RIDOLINES AND RIDOSOLS"
	Pickling	"RODINE (M-200)"
STAINLESS STEEL	Cleaning	"DEOXIDINE"
	Coating with Copper	"CUPRODINE"
	Pickle Polishing	"RODINE"
	Soldering Flux	"FLOSOL"

CHEMICALS ACP PROCESSES

WRITE FOR DESCRIPTIVE FOLDERS ON THE ABOVE CHEMICALS AND FOR INFORMATION ON YOUR OWN METAL PROTECTION PROBLEMS

CHEMICALS ACP PROCESSES

are getting back into promising fields largely neglected when they were hard pressed to meet demand from established markets and the military. Architectural applications, for instance. Stainless people believe their product is best for certain wall construction.

Since the early 1930s, stainless demand has grown steadily (see chart p. 71). Demand cycles have not been sharp, with the one exception of 1949. Overall trend has been upward. Use of stainless has doubled every 10 years since the 1920s.

Stainless Columns Stronger

E. J. Hanley, president of Allegheny Ludlum Steel Corp., speaks with confidence of going after structural business for stainless. He also talks about a precipitation hardening alloy now under development by A-L as promising for use as airframe structurals—"and we are going after this business."

"With proper design," says Mr. Hanley, "a stainless steel column could be over six times stronger than a conventional column made of carbon steel. The failing strength of one practical grade of stainless steel for such use is 110,000 psi, while carbon fails at 18,000 psi.

"To put it another way, 1 lb of stainless could be made to do the work of 6 lb of carbon steel. While the overall price of stainless might still be higher, savings could come from other directions.

Maybe Even Bridges

"Less weight will permit a savings on foundations; resistance to atmospheric corrosion will eliminate the need for painting which, incidentally, is very important in industrial buildings where structurals are left exposed. Finally, the bulk is less, thereby providing for more usable space in a given building."

Mr. Hanley thinks it not illogical that some day even bridges will be built of stainless steel. These things will not happen overnight, he admits, "but I think it a distinct possibility that the day may come."

BENEFITS: Get Braced For New Demands

Unions expected to push hard for more fringe benefits in '54 . . . Annual costs now over $10 billion . . . Estimate about $800 per worker in '54 . . . Set plans now—By *R. M. Lorz.*

"All labor wants," the late Samuel Gompers once said, "is one four-letter word—MORE." In 1954 that simple four-letter word will be stretched to the limit to cover a multitude of fringe benefits.

Business leaders in Northern Ohio want to be prepared when they come to the bargaining table. Many recently attended the Annual Personnel Executive Conference in Cleveland to find out more about what they may be asked to give. Increased competition and an ever growing list of fringe demands mean higher costs. Recent settlements in the rubber and can industries are straws in the wind. Workers in the rubber industry got 7.5¢ in fringe benefits; can companies settle for 6.5¢.

The widening area of new demands coupled with cost of legally required benefits has already added up to quite a bill for industry. Estimated costs are now in excess of $10 billion annually. Estimated cost per worker in 1954 is expected to be about $800, equivalent to 40¢ per hour.

Panel experts and listeners alike expected they would have to do some hard bargaining to cope with the following demands:

Insurance—Industry will probably be asked to pay all the freight on liberalized coverage amounting in many cases to the equivalent of the worker's annual salary.

Sick & Accident Benefits—Pressure is on for more preventive medical care. Emphasis is on day-to-day treatment with elimination of so-called fine print in contracts a union must.

Pensions — Although many workers would have it otherwise, an effort to establish more non-contributory plans will be made. In many Ohio industries unions are also expected to plug for extending pensions beyond the $117.50 national monthly average. In Cleveland alone the number of pension plans has doubled since 1950. These plans cover about 120,000 workers—over 100,000 of these men are enrolled in non-contributory plans.

Holidays & Vacations — From firms not giving at least 6 paid holidays unions are expected to make a standard demand for 7. Time off for voting on Election Day will also be asked in many cases. Three weeks off for 15 years and 4 for 20 to 25 years are the vacation goals most often mentioned. Graduated scale from 10 days for 5 years to 3 weeks for 15 years may crop up as an alternative proposal.

Classification Adjustments — Greater pressure is expected from craft unions to boost differentials between skilled workers' day rates and production workers' incentives.

Area Differentials—Official union suspicion of a supposed search for cheap labor should keep this issue alive in '54.

Equal Pay for Women — Some unions want to raise the minimum wage to $1.25 per hour. Others will probably make specific demands for inequity adjustments for women. Many industry leaders may favor the equal pay for equal work approach.

Overtime & Premium Pay — Drive to liberalize payment of overtime beyond requirements of Wage-Hour and Walsh-Healy Acts will go on. Most companies already grant time and a half for hours over 8 worked in one day. Subject to the amount of overtime scheduled in 1954, unions will probably ask for double time for hours worked over 10 or 12. Cost of flat cents-per-hour premiums can be accurately measured but another angle should crop up this year. Emphasis will be on a reduced work week paid as a 40-hour week.

Severance Pay — Unions have have been working for legislative action to liberalize these benefits.

Look For These Union Demands in 1954

1. Basic benefits of not less than $2.00 per month for each year of service—exclusive of social security. Severance pay is tied in here.
2. Deferred pensions at age 65 for those who retire before age 65 but after 25 years of service.
3. Greater pressure for all or a major part of the cost of pensions to be assumed by the employer. (This is interesting when balanced against knowledge that many employees prefer contributory plans if given a choice.)
4. Where there is a contributory plan the proposal will be for crediting the full interest earned but not less than 2.5 pct.
5. Vested rights after 5 years of participation. This now is usually 10 or 15 years.
6. No compulsory retirement.
7. Time spent on military leave, sick leave and union leave to be counted in computing benefits.
8. Paid sick leave—other than sickness and accident insurance; family funeral pay and pay for time spent on jury duty. Payments to hourly workers for time off for death in the immediate family are increasing.
9. Continuance of the concerted drive for a guaranteed annual wage.
10. Demand for a substantial wage increase with proportionate increases in fringe benefits tied to wage scale.

The Iron Age

INTERVIEWS.....

Douglas O. Yoder
President, The Yoder Co.

Can Young Executives Make The Grade?

- You've heard often that today's younger executives don't know how to survive in a buyer's market—they've had it too good. Douglas O. Yoder, president, The Yoder Co., disagrees.
- Some will never make the grade, but generally today's young executives are better trained than their predecessors, he told Iron Age Cleveland Editor R. M. Lorz.
- Scientific management, better planning for production and sales, more market research should all pay off.

Q. Do you think top level executives in the 30-40 year age bracket are ready to meet competition in a buyer's market?

A. Many of the top level executives in the 30-40 year age bracket will never be completely ready—some will fall on their faces. However, those who will succeed are working with a balanced organization made up of competent personnel. In this type of organization, the president will act as a coordinator and stay away from the details of any one function so that he can have a longer range and an objective point of view.

Q. What concrete steps is youthful management taking today to cut costs? Improve quality? Step up sales?

A. Youthful management is using human relations, incentives, and training programs to cut costs. They are improving quality by establishing a quality control department, staffed by competent personnel and responsible to top management rather than through another department whose main function might be, for example, production or product design. To step up sales they are working on better market analysis, advertising, sales training, and public relations.

Q. How well prepared do you think today's young president is to meet complex industrial and human relations problems?

A. Industrial and human relations are complex today—but remember we have grown up with them in this industrial age. We have had better educations and social opportunities than our fathers had—plus the advantage of having worked with our fathers and gaining some of the benefits of their experiences.

Q. What do you believe is the single most important overall approach a young executive can adopt?

A. The broadest possible approach is best. He can do this by selecting good people for all functions, giving them authority, but most important is the responsibility that goes with that authority.

Q. How much will recent developments in scientific management help the young president in today's more competitive environment?

A. Scientific management will help the young president a great deal because it produces a balanced organization. It not only deals with sales, production, and finance but also product development, industrial and public relations.

Q. Do you believe membership in groups such as the Young Presidents' Organization will help you to meet increased competition?

A. Definitely. In any business group, and especially in the Young

Mr. Yoder Says . . .

"We recently returned from an experimental case history seminar course for Young Presidents Organization at Harvard University. Three important things learned were:

1. Don't be too hasty to fire an employee—it's probably the president's fault.
2. What's the hurry in making a decision?

And most important was:
3. Humility.

Presidents' Organization, there is a very free exchange of ideas interchanged at all of the meetings. When a member speaks of the good results he has had, someone else can always profit from the idea. If anyone asks a question he will get several good plans to choose from. The National Convention of the YPO is particularly good. Admittedly, these young presidents are not experts—but we know it, and are willing to learn.

Q. Do you think the trend toward "conference type" management will slow up vital policy decisions?

A. Not necessarily. Many times it speeds up good policy decisions because all divisions or departments are consulted in conference before a decision is made.

Q. How far ahead are you planning in your own company's various programs?

A. We are preparing a written 5-year program with an objective we will have to jump to reach. It will include such things as market analysis, increased sales and production goals, projected balance sheet, income and expense statements, and a complete program for equipment replacement and modernization. In fact, we have the equipment replacement set-up on a 10-year program.

Q. What is your outlook for 1954?

A. I believe our company's sales of tube and pipe mills, roll forming machines, and slitting equipment is going to be a little better than last year for two reasons:

1. Our sales department is going to make more calls with improved market analyses and better working tools.
2. We manufacture cost reduction equipment which is one of the foremost items considered by business today.

Generally, spotted industries are going to have tough sledding, but there will always be companies in most industries who will make a profit and move ahead.

Crucible Cartoons Teach Safety

Crucible Steel Co. is using the comic strip technique to get its safety message across to employees. A new booklet prepared by company safety engineers and artists has been distributed to all workers and will be used to indoctrinate new employees when they join the firm.

The 36-page booklet is in four colors. It is divided into two sections—one explaining company thinking on safety, and the other consisting of an ABC primer of illustrated safety rules and suggestions.

In alphabetical order, the primer goes into such subjects as attitude toward safety, reporting of injuries, danger signals, how to fight fires, good housekeeping, loose clothes, horseplay, first aid, and protective equipment.

Exploit Reading Habit

"We have used a number of techniques at Crucible," says Arthur D. Murphy, Crucible safety director. "Now we're trying the cartoon method in this handbook because we feel that a light, graphic presentation of the safety message can achieve maximum readership. People enjoy reading the comics on Sundays. We're taking advantage of this reading habit."

In outlining its philosophy on safety, Crucible tells employees that:

(1) Safety comes first in the company, that not one pound of steel should be produced or shipped at the expense of a disabled employee.

(2) Safety is the responsibility of everybody, not just the safety department.

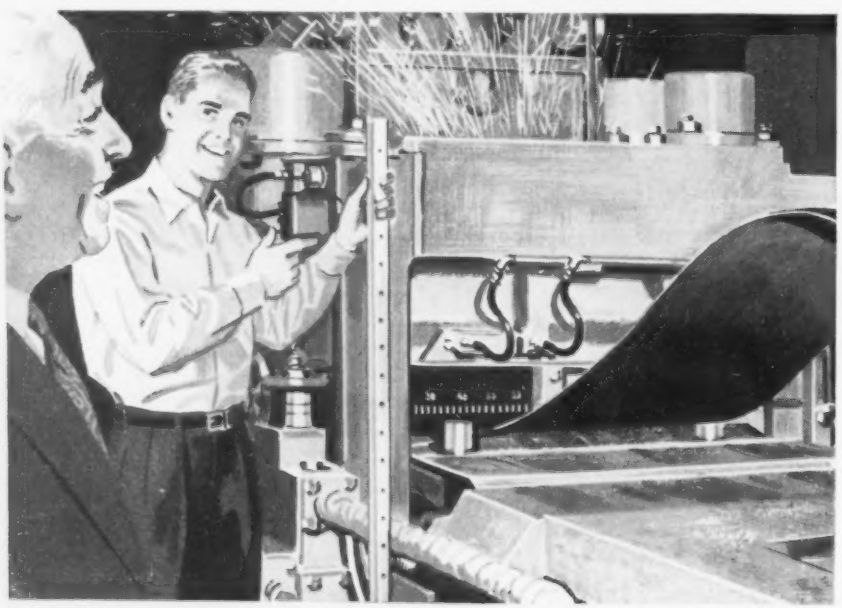
(3) There is no place in the company for supervisors who have no time for safety.

Accidents don't just happen, they are made
Make sure you don't make one today
(or any day)
A man who is interested in SAFETY
Is INTERESTED in his job
THE BEST PLACE TO START
SAFETY IS
HERE
Remember:
WE ALL LIKE TO DO THINGS THE EASY WAY,
THAT'S HUMAN NATURE
THE SAFE WAY IS THE EASY WAY WITH
JUST A LITTLE PRACTICE,
THAT'S BEING SMART

CARTOON approach is used by Crucible Steel Co. to get its message across. The company figures that since most people enjoy reading the comics, it might as well use this technique to stress safety in plant operations.

If maintenance is your problem
BERYLLIUM COPPER MAY SOLVE IT

THE PROBLEM. Massive flash welders like this are the key to mile-a-minute production of steel strip. They join wide coils together so that they may be continuously fed into the pickling operation. Welders used to be equipped with solid dies made of various electrode materials, but the results were far from satisfactory. The dies picked up flash, and required frequent dressing. They wore rapidly or even fractured under the heavy pounding. Result: heavy maintenance costs, excessive downtime, lowered production.



THE SOLUTION. Many mills, seeking a way to minimize such interruptions and their bad effect on over-all operations, have now redesigned their flash welder dies. The solid die has been replaced by an assembly which uses a fitted insert or electrode made of tough wrought Berylco beryllium copper. The Berylco inserts are capable of taking heavy punishment and do not fracture. They wear better. Flash adherence is reduced, and thus dressings are less frequent. Maintenance costs are down, production is up, and with it all welds are smoother and sounder. Only Berylco, with its combination of electrical conductivity and ruggedness, could have made such results possible.

THIS IS A TYPICAL ILLUSTRATION of Berylco's ability to cut maintenance costs to the bone. The same success might be cited in such products as business machines and home appliances, where beryllium copper parts, large and small, assure continuous customer satisfaction and eliminate expensive service calls. Plan now to build service-free performance into your product with Berylco. For sample material or engineering help, write THE BERYLLIUM CORPORATION, Dept. 4B, Reading 6, Pa.

Tomorrow's products are planned today—with Berylco beryllium copper

—Management—

SIMPLIFICATION:

Management seminar stresses ease of boosting efficiency through job analysis.

Indicative of the rising management thirst for information was the first management seminar of the National Federation of Metal Finishers at Chicago last week. For a first, the seminar did well. Almost 150 management men in the metal finishing industry attended from widely scattered points.

The program that drew them: discussions on work simplification programs, layout of a production line, budgetary controls, and business taxation. The American Electroplaters Society, a branch of which was meeting concurrently with the NFMF group, will sponsor its own session at the 41st annual convention in New York City this July.

Can Time Any Job

Main point of the seminar was that money can often be saved in a small shop by nothing more than rearrangement of existing personnel and equipment. As S. J. Fecht, consultant told the group, work simplification can reduce costs and is nothing more than "good common sense" applied to an existing plant. Job simplification, getting the most out of each employee and each machine, doesn't call for batteries of expensive experts, nor does the shop management have to drop every other project to concentrate on making work simpler.

With nothing more complex than the back of an envelope and a stub pencil, the small plant owner can begin studying his plant with an eye to cutting costs. Mr. Fecht, indicated that the secret, if any, is to break down each job into its component parts. Find out exactly what is done. When you have done this, you have most of the data needed. Timing each operation is a further help, showing the employer how much each operation takes in the total time required for the complete job.

Key to Productivity

Shaving would be a good example. (1) Open cabinet. (2) remove razor, soap. (3) place blade in razor. (4) soap face. Each operation in this job would then be timed. With the two simple tools of analysis and timing, just about any operation from charging a blast furnace to washing socks can be timed, it is claimed.

In examples brought before the seminar group, it wasn't uncommon to find single operations within a job that were productive only 60 pct of the time, sometimes as low as 40 pct.

Saved $900

Using as an example an electroplating line handling parts just before they reach the vats, Mr. Fecht demonstrated a 50 pct cut in costs that was achieved without any major changes in equipment, reduced the number of operators on the line from four to two, still allowed the two girls on the line time enough to take a breather.

The factory owner's job is to spot the bottleneck operations in each job, then concentrate on these, work out some means of speeding up the bottleneck to the pace of other operations. One electroplating problem was solved with such simple changes as teaching stackers to use both hands all of the time, not one hand most of the time. Sounds simple, but it netted the company an additional $900 per year.

Must "Sell" Employees

Biggest problem in beginning a work simplification program, Mr. Fecht found, is in seeing that the program is sold to the employee. "Eighty pct of work simplification is old-fashioned psychology. The other 20 pct is plain horse sense."

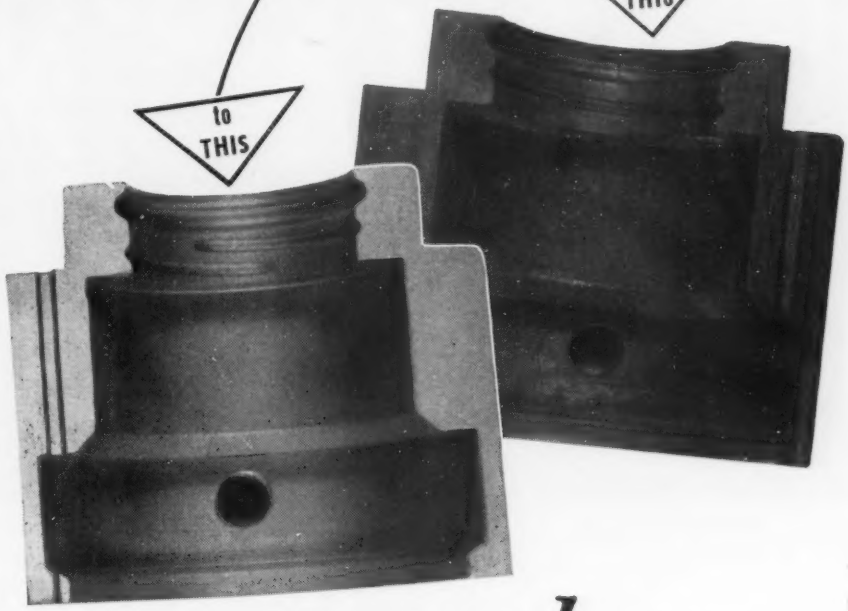
Though Mr. Fecht didn't say so, it's worth pointing out that the primary target in work simplification isn't eliminating employees. It's in achieving higher production at lower cost, which means more business and consequently, more plant.

finish TOOLS, DIES and MOLDS

in minutes

from THIS

to THIS



...and *save hours*

with LIQUAMATTE wet blasting

It takes only 30 seconds to 10 minutes to finish tools, dies, molds, engine parts, etc. with a Liquamatte — an operation that formerly required 1 to 6 hours by hand methods. Scale, fine burrs and grinding lines are removed in a fraction of the time previously possible. For example, savings as high as 80% have resulted on some parts at the Oling Tool Company.

Liquamatte Wet Blasting has eliminated many manual surfacing operations, transforming precision finishing into a mass production operation. It has eliminated all manual polishing except on surfaces where a mirror finish is desired. And the mirror finish is achieved in far less time on a Liquamatte finished surface.

See how Liquamatte Wet Blasting can save time and money for you. *Send today for the bulletins of your choice below.*

THESE BULLETINS TELL HOW

Save Time on Tools, Dies, Molds. | Save Time on Glass Molds | Save Time on Plastic Molds.

American LIQUAMATTE WET BLASTING

WHEELABRATOR & EQUIPMENT CORP.

510 S. Byrkit St. Mishawaka, Indiana

DOUGLAS WORKERS pick up food from three-car cafeteria on wheels. Food trains have solved in-plant feeding problems.

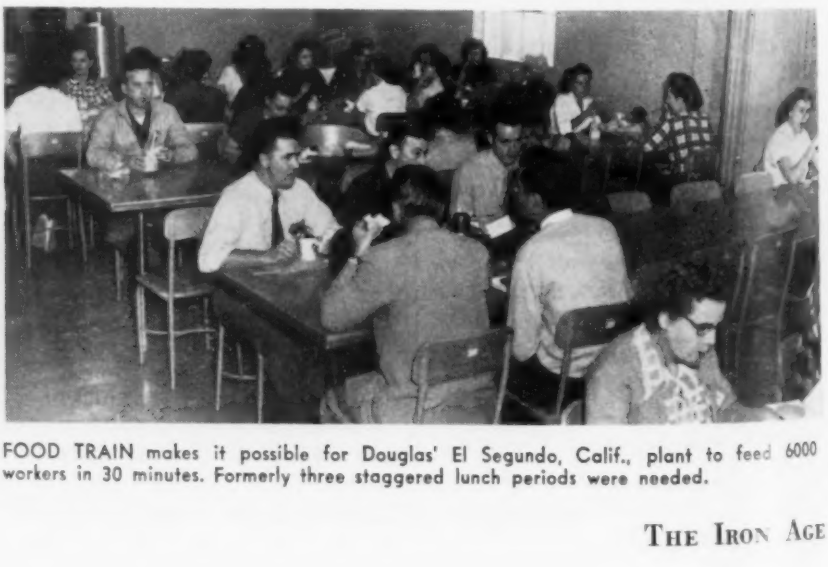
Come and Get It—Food on Wheels

Feeding 6000 employees is a tough enough problem to give management stomach ulcers. But at Douglas Aircraft's El Segundo, Calif., plant chowtime has been reduced to a single 30-minute lunch period for each shift.

Gimmick is use of cafeteria on wheels. Twelve food trains, each with three cars, carry hot and cold dishes, desserts, drinks from the kitchen to areas near the plant's ten dining rooms. Employees file down both sides of the trains to pick up 70-85¢ meals.

GET SET—Go! Food train drivers ready for lunchtime dash from plant's kitchen to areas near dining rooms. Mobile cafeteria has a cashier's desk in each train.

MOBILE CAFETERIA carries hot and cold dishes, drinks, desserts.



FOOD TRAIN makes it possible for Douglas' El Segundo, Calif., plant to feed 6000 workers in 30 minutes. Formerly three staggered lunch periods were needed.

PLASTICS: Competition Paces Growth

Reinforced plastics fabricators expect best overall year yet in '54 . . . But should also be most competitive . . . More resistant resins spur new uses—By K. W. Bennett.

A 33 1/3 pct increase in the use of reinforced plastics is forecast for 1954. The use of polyester resins, reinforced by fiber glass or other fibrous material, has been rising regularly since a postwar low in 1947.

Auto Use Grows

But owners of small shops engaged in the fabricating of these reinforced plastics aren't so sanguine about their own prospects for the coming year. Their attitude: 1954 will be a good business year. But a lot of little shops engaged in defense work are running out of orders. And some of the larger shops are slowing down. Some producers in the hotly competitive injection molding field are considering adding reinforced-plastic fabrication to their current product lines.

The result: Overall business in reinforced plastics will continue at a record high during 1954, and will rise well above 1953 levels. But the available fabricating business will be divided among an increasing number of fabricators and competition will be keener than ever despite the rise in prospective new business.

Stretch Temperature Range

Reinforced plastic took only about 1 pct of the U. S. total plastic resin output last year. Nonetheless, it is regarded as one of the strongest comers in the plastics field.

For instance, today Chevrolet speaks of producing 1000 plastic car bodies per month within the next few months. Nine months ago, such output was regarded as impossible. Two years ago only two firms in the U. S., both on the West Coast, had plastic car bodies for sale.

Since long-run production molds for pressing reinforced plastics run somewhat lower in cost than molds for injection molding plastics, some of the injection molders are interested in the reinforced plastic field. They have other reasons as well. At last week's meeting of the Reinforced Plastics Div. of the Society of the Plastics Institute, the outlook was bright.

Resins under development will give greater strength at both higher and lower temperatures. This means more use of the material in the chemical and petrochemical industries where noncorroding and chemically inert containers and piping are a must but heat is a problem. A fire-quenching resin now available plus other fireproof resins due soon should give building applications a lift.

Postwar Growth Fast

Similarly, increased use of reinforced plastics as a substitute for metal dies and jigs is dead certain. At the same time, more capital is coming into the field for plant expansion as companies in other lines seek to diversify their output. At least four major steel producers have bought into plastic pipe in the past year.

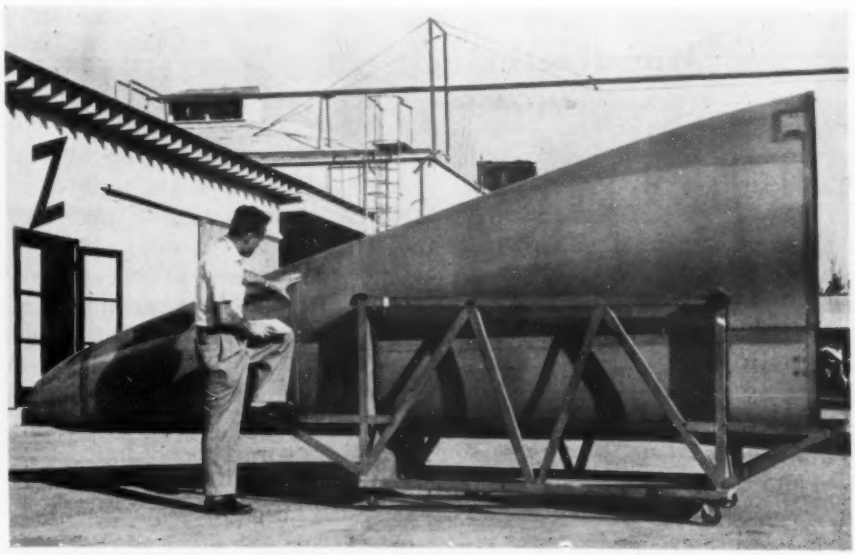
Reinforced plastic is getting bigger, but it was already a hefty infant. In 1953 some 26 million lb of polyester resin was produced (the most popular resin for reinforcing the basic fiber) by a little over 25 companies. About 12 chemical companies produce other resins. And about 26 companies are involved in the manufacture and preparation of glass fiber for use by reinforced plastic fabricators.

An indication of the rapidity of this growth: in 1945 about 3,500,000 lb of polyester resin were produced. All of this went for military purposes, as domes for radar equipment. By 1947, output of polyester dropped to 800,000 lb. At that time civilian usage of reinforced plastic began to develop. Although Korea gave the industry a healthy boost, it had already pulled itself up from the 1947 lull by 1951, reached 26,000,000 lb in 1953, with 35,000,000 lb augured for 1954.

Military Using More

The armed services like reinforced plastic and predict increasing usage. Strategic steel and aluminum are spared, and in some applications the plastic will actually outperform metal.

As one defense mobilization specialist put it at the SPI meeting: "In 1952 we found about 113 projects underway among the armed



STINGER tail of Navy's Neptune bomber of reinforced plastics.

Production

Grinding:

Foundrymen hear 14 ways to trim grinding wheel costs.

Grinding wheel sales hit a $160 million total last year despite efforts of producers to sell fewer wheels by telling customers how to economize. Sales manager K. S. Cowlin, grinding wheel division of Electro Refractories Abrasives, suggested 14 ways to cut grinding costs in a recent speech before the Western New York Chapter of American Foundrymen's Society.

(1) Select wheel hardness compatible with good grinding costs.

(2) Use thinner wheels where possible. They may do the same amount of work.

(3) When wheels are partially worn, maintain surface speed by changing rpm or using on other machines.

(4) Take advantage of large hole allowances in resin wheels. It might pay to install adapter flanges.

(5) Use a template for measuring worn wheels before removal.

(6) Substitute an aluminum oxide for silicon carbide in grinding nonferrous metals, gray iron or hard malleable iron.

(7) Where portable cups are used, a wider rim for the same price or a straight-sided cup might be practical.

(8) Dual specification wheels can sometimes be used effectively —but weigh advantages against cost.

(9) Reduce vibration by using a magnetic chuck to hold steel castings for swing grinding.

(10) Higher cost of hard sided wheels may pay for grinding brake shoes and other castings where work is mostly corner grinding.

(11) Wheels treated with materials such as wax may justify their added cost, particularly on aluminum and brass.

(12) Unless castings have some dressing action, occasional dressing of wheels can be economical and a safety measure.

(13) True your wheels for additional safety and to restore worn wheels to normal contour.

(14) Consider conversion from large vitrified wheels to resin wheels for higher surface speed and added toughness.

Defense

Award Third Carrier Contract

Design and planning experience preceding work on the Navy's first two giant aircraft carriers will hold down the cost of the third such vessel, to be built by Newport News Shipbuilding and Drydock Co.

The award for construction of the newest 60,000-ton carrier (CVA-61) went to the Virginia firm last week on the basis of a $117,750,000 bid. Total cost, including the government investment in special equipment, is estimated at about $182 million.

By comparison, the cost of the first super-carrier, the Forrestal, is computed at $218 million. The second, the Saratoga—under construction in Brooklyn—will cost about $212 million.

Contracts Reported Last Week

Including description, quantity, dollar values, contractor and address. Italics indicate small business representatives.

Pulse generator, 109 ea, $146,499, Federal Mfg. & Engineering Corp., Brooklyn, N. Y.

Strip, locking, 95080 ea, $59,714, Reiner Electronics Co., Inc., New York.

Actuator assys, and spare parts, V, $102,486, Airesearch Mfg. Co., Los Angeles, *James B. Meyer.*

Popett valve and diaphragm, V, $38,345, Bendix Products Div., Bendix Aviation Corp., South Bend, Ind., *G. I. Lyman.*

Various assys, and windshield wiper components, V, $29,082, The Marquette Metal Products Co., Cleveland.

Valve assy, V, $111,573, Adel Div., General Metals Corp., Burbank, Calif.

Spare parts for aerial photographic cameras, $57,289, Fairchild Camera & Instru. Corp., Syosset, L. I.

Wheel assys, 206, $31,974, General Tire & Rubber Co., Akron.

Transformer, power, 700, $43,022, General Electric Co., Chicago.

Switch, rotary, Model UG-1:3, 280, $71,658, General Electric Co., Syracuse, *Fred A. Burley.*

Radio set control, 400, $45,404, Tabet Mfg. Co., Norfolk, Va.

Mk 91 VT fuze container for Mk 72 fuze, 567000, $161,312, Melvina Can Co., Maspeth, L. I.

Potentiometers, 16457, $72,133, Bourns Labs., Inst. Sales Corp., Riverside, Calif.

Boxes for 90 MM shell, 176073 ea, $412,010, Friday Lumber Co., Tuscaloosa, Ala.

Spare parts for tent heaters, 39343 ea, $49,846, Vogt Brothers Mfg. Co., Louisville, Ky.

Gas turbine power units, 103, $1,781,498, The Garrett Corp., Airesearch Mfg. Co., Los Angeles, *James B. Meyer.*

Control boxes, miniatured, for Stratford Pen console control unit, 280, $41,773, Stratford Pen Corp., New York.

Rotor hub assembly, approx 70, $51,500, Kerns Mfg. Corp., Long Island City, N. Y.

Base, components for 412" mortar shell, $224,400, Rheem Mfg. Co., Houston, *J. Driscoll.*

Shell, type G, MPTS for 81 MM mortar, $112,500, Rheem Mfg. Corp., Linden, N. J., *E. R. Boothman.*

Manufacturing

Continued

services to use reinforced plastic in military applications. In 1953, we had almost that many new projects underway in the first half of the year."

Find New Applications

A relatively new market that's developing rapidly is trucks. Tank trucks with reinforced plastic tanks are in production, plastic truck cabs are already here, and parts for conventional truck cabs are now being made in plastic, including entire fenders.

Barges are a future bet. The Army will soon begin tests of a plastic 50-ft cargo tug that will push plastic barges, run in 18 in. of water, be powered by two screws. In addition, civilian bargemen are using reinforced plastic for hatch covers and cabin trim. Railroad car parts are regarded as highly possible. Farm equipment, appliances, and aircraft applications are increasing. Sheet plastic for construction purposes is another highly regarded market.

A number of plastic fabricating plants are offsetting heavier competition by installing more advanced equipment; ordering bigger molds to handle larger size parts. Plastics fabricators are an increasingly important market for metal dies in either cast metals, sprayed metals, or machined tool steel. A few are using low-carbon range tool steel with reportedly excellent results. Meehanite use is increasing, though some molders claim they haven't been getting the finish they'd like for some of their products.

RUST-PROOF
IRON AND STEEL . . . FOR YEARS!

ZRC — new protective coating — "cold galvanizes"
Costs 1½¢ per sq. ft. of 100% rust protection

Corrosion your problem? **ZRC** — new metallic zinc-rich coating — completely protects iron and steel under conditions where all other normally used coatings fail. And **ZRC** gives this greater protection at lower coverage cost — 1½¢ per sq. ft.

ZRC's Record of Results — **ZRC** painted on gas storage drums in an ocean-side location, withstood corrosive action of salt spray, weather, for 6 months, to date. Ordinary protective coatings failed within 2 months.

ZRC sprayed on steel frames used in steam curing treatment of cement block manufacture, kept frames good as new for better than 6 months. Frames normally broke down and were replaced well within this time period. Net savings — over $4,000 yearly on replacement costs, using **ZRC.**

ZRC Easy to Apply — **ZRC's** unique vehicle prevents settling of metallic zinc — makes spraying possible, requires no repeated stirring while brushing on **ZRC.** Used either way, **ZRC** forms a tough, firmly adherent coat — touch dry in 30 minutes, completely hard in 4 hours.

ZRC can be applied directly over adherent rust, mill scale, pitting — prevents further rusting, allows no sideways spread beneath the **ZRC** coat — no rust "creepage".

what is ZRC?

ZRC is a zinc-rich coating that protects iron and steel as effectively as hot dip galvanizing or electroplating. **ZRC** contains 93%-95% metallic zinc in a vehicle that prevents settling. A normal coating of **ZRC** deposits ¼ oz. metallic zinc per sq. ft. of surface. It is firmly adherent. **ZRC**'s action is electrolytic and sacrificial. The zinc becomes anodic (A & B, diagram), while the protected iron or steel becomes cathodic, (A^1 & B^1, diagram), in the presence of water vapor. Corrosion attacks at the anode — the zinc layer — forming a film which itself helps retard further corrosion. The cathodic iron or steel is untouched.

Full engineering assistance available

Bring your toughest problems to us. The Sealube staff of corrosion specialists is prepared to help you save time, labor, maintenance costs.

ZRC SAMPLE

Test **ZRC.** Sample quantity — enough to cover 8 sq. ft. — is available. Also **ZRC** information folder. Write Dept. I

CAULKING AND COATING DIVISION

The SEALUBE Company

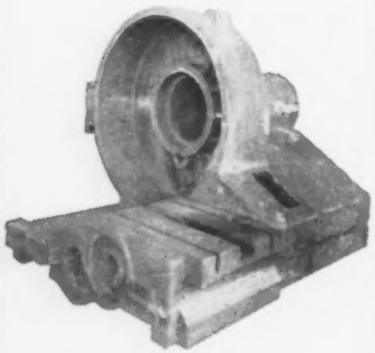
WAKEFIELD, MASSACHUSETTS

Hyde Park

RED CIRCLE Rolls ALLOY-CHILLED

Gray Iron Castings

Castings of any size up to 80,000 pounds. Hyde Park facilities are equal to your every requirement



Machine Castings
Lathe Beds
Housings
Pinion Housings
Mill Housings
Shoe Plates
Layout Plates
Surface Plates

Hyde Park

FOUNDRY & MACHINE CO.
Hyde Park, Westmoreland County, Pa.
ROLLS
ROLLING MILL MACHINERY
GREY IRON CASTINGS

Industrial Briefs

They've Moved . . . CLEARING MACHINE CORP.'s Detroit office is now located at 10600 Puritan Ave. E. Baumrucker is in charge.

Set Up . . . STANDARD PRESSED STEEL CO., Jenkintown, Pa., has created a wholly-owned subsidiary, Standco Canada, Ltd., at 193 Bartley Drive, Toronto.

Opens Office . . . ARTHUR D. LITTLE, INC., opened a West Coast office at 114 Sansome St., San Francisco, with Christian J. Matthew as head.

Mighty Powerful . . . WESTINGHOUSE ELECTRIC CORP. will build the world's two most powerful transformers for Detroit Edison Co. Each of the units will be able to handle the electric power needed by a city the size of Baltimore, Md.

Elected . . . METAL LATH MANUFACTURERS ASSN. elected H. B. Brown, U. S. Gypsum Co., president at its annual meeting in New Orleans.

Distributor . . . MARSH STEEL CORP., North Kansas City, Mo., has been appointed a distributor of aluminum products by the Aluminum Company of America.

Established . . . BORG-WARNER CORP., Chicago, established a Market Research Dept., with John A. Drake as director.

Special Duty . . . AMERICAN CAN CO.'s Roger F. Hepenstal, vice-president in charge of manufacturing, was appointed to special duty with the Dept. of Defense in Washington.

Well Deserved . . . Frank J. Koegler, vice-president of NATIONAL LEAD CO. and general manager of the Doehler-Jarvis Div., was honored last month for his 40 years' service to the company. An anniversary dinner at the Commodore Perry Hotel in Toledo, was attended by more than 100 of his friends and associates.

Elbow Room . . . JOHN VOLKERT METAL STAMPINGS, INC., Queens Village, completed its third major plant expansion in the past 4 years by adding 12,000 sq ft of floor space.

Jersey Directory . . . The new 1954-55 NEW JERSEY INDUSTRIAL DIRECTORY will be published early in March. It covers over 15,000 firms. Companies are listed alphabetically, geographically and by product.

Merger . . . Parkersburg Rig & Reel Co. and Aetna Ball & Roller Bearing Co. have merged. The new company's name is PARKERSBURG - AETNA CORP. A. Sidney Knowles was elected chairman of the board, and William A. Wood is president.

Sales Office . . . NATIONAL RESEARCH CORP. opened a new sales office in Cleveland at 4205 Chester Ave. George A. Goetz is the company's representative there.

Work Started . . . TEMCO AIRCRAFT CORP. started work at its Greenville, Tex., plant on a contract for the overhaul of a large number of Air Force C-47s.

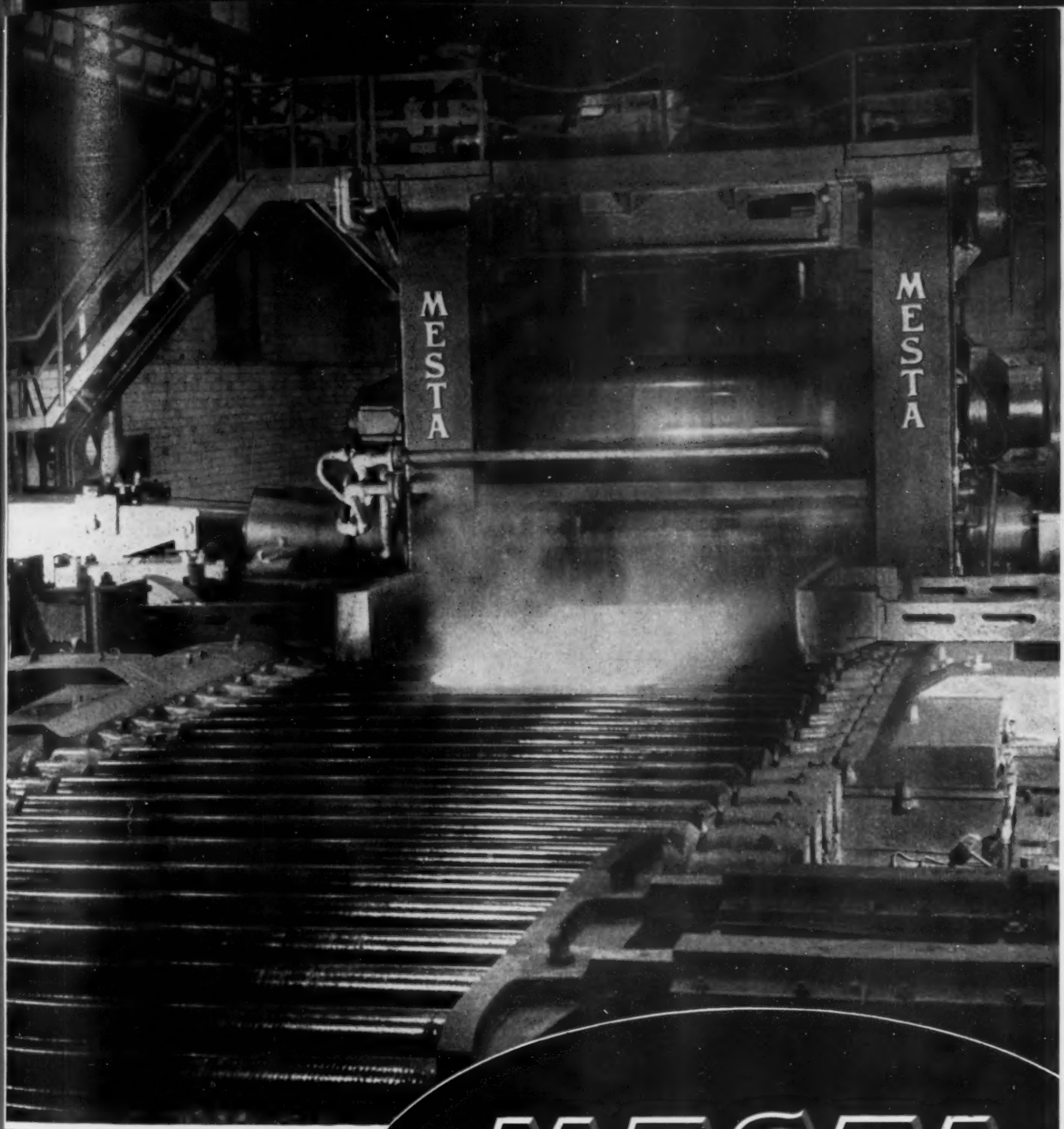
To Build . . . WYANDOTTE CHEMICALS CORP., Wyandotte, Mich., started construction this month on a new plant in Los Angeles County. Production at the plant is scheduled for August.

Scholarship . . . LINK-BELT CO., Chicago, has established a scholarship to help worthy students obtain an education in mechanical, metallurgical, or industrial engineering at Illinois Institute of Technology.

Highlight . . . AMERICAN SOCIETY OF MECHANICAL ENGINEERS' forthcoming international meeting will be highlighted by an inspection trip through the plant of La Consolidada, S. A. The trip is scheduled for the second day of the meeting, which will be held Mar. 10-12, in Mexico City.

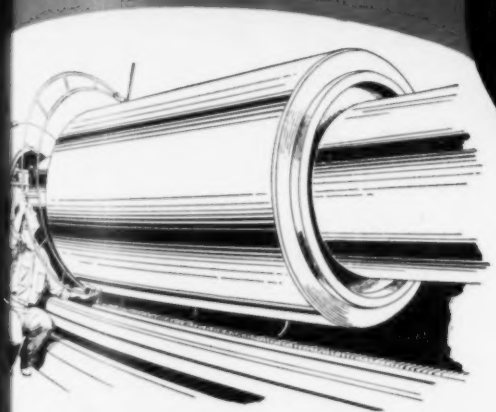
Regional Meeting . . . WIRE ASSN. will hold its regional meeting at the Hotel Sheraton, Worcester, Mass., on Apr. 22-23.

Spreading out . . . DETROIT STEEL PRODUCTS CO. has opened a Southeastern warehouse and district sales office at Birmingham, Ala. Paul Caddell is in charge of operations as regional sales manager.



MESTA 160" FOUR-HIGH
REVERSING PLATE MILL

MESTA
PLATE MILLS



FINISH GRINDING A LARGE MESTA BACKING-UP ROLL
IN A MESTA HEAVY DUTY ROLL GRINDER

Designers and Builders of Complete Steel Plants

MESTA MACHINE COMPANY

PITTSBURGH, PENNSYLVANIA

NEW CARS: What'll You Have?

New models feature horsepower, style, and luxury . . . Features tabulated for quick comparison . . . Some popular extras becoming standard on luxury lines—By *R. D. Raddant.*

Trying to figure out the cost of a new car to the consumer has reached the point where it requires an electronic calculator. There are so many taxes, extras, handling and transportation charges, not to mention financing, that a prospective buyer scarcely knows where he stands until the actual bill of sale is made out.

Advertised delivered prices, which include federal taxes and handling charges, are probably the best yardstick for auto price comparison. Even so, they still come a long way from reflecting the final cost. Local and state taxes and the cost of all extras, including gas to drive it home, must be added.

A trend is developing in the high price bracket to include some so-

1954 4-Door Sedans, Specifications, Prices*

Make	Price	Wheelbase O'all Length	Approx. Weight	Max. HP at RPM	Engine Type† Comp. Ratio
Buick					
Special (40)	$2265.32	122/206.5	3714	150	OHV-V8/8.1:1
Century (60)	2520.17	122/206.5	3788	200	OHV-V8/8.5:1
Super (50)	2711.17	127/217	4105	182	OHV-V8/8.5:1
Roadmaster (70)	3269.36	127/217	4250	200	OHV-V8/8.5:1
Dynaflow transmission and power steering standard on Roadmaster.					
Cadillac					
Series "62"	$3932.70	129/216	4330	230/4400	OHV-V8/8.25:1
Series "60"	4683.32	133/227	4492	230/4400	OHV-V8/8.25:1
Hydra-Matic transmission and power steering are standard equipment in all Cadillacs.					
Chevrolet					
"150" Series	$1680	115/196.5	3210	115/3700	OHV-S6/7.5:1
"210" Series	1771	115/196.5	3230	125/4000	OHV-S6/7.5:1
Bel Air	1884	115/196.5	3255	125/4000	OHV-S6/7.5:1
125-hp engines are with Powerglide, optional at $178.35.					
Chrysler					
Windsor DLxe	$2562	125.5	3655	119/3600	LH-S6/7:1
New Yorker	3228.75	125.5	3870	195/4400	OHV-V8/7.5:1
New Yorker DLxe	3433	125.5	4065	235/4400	OHV-V8/7.5:1
Custom Imperial	4259.50	133.5	4355	235/4400	OHV-V8/7.5:1
PowerFlite transmission is standard on all 8-cylinder Chryslers.					
De Soto					
Powermaster, Six	$2385.75	125.5/214	3590	116/3600	LH-S6/7:1
FireDome V-8	2673	125.5/214	3750	170/4400	OHV-V8/7.5:1
Dodge					
Meadowbrook Six	2024.75	119/205.5	3195	110/3600	LH-S6/7.25:1
Coronet V-8	2244.50	119/205.5	3405	150/4400	OHV-V8/7.5:1
Royal V-8	2372.75	119/205.5	3425	150/4400	OHV-V8/7.5:1
Ford					
Mainline	1700.50	115.5/198	3155	115/3900	OHV-S6/7.2:1
Mainline Eight	1777	115.5/198	3250	130/4200	OHV-V8/7.2:1
Customline Six	1793	115.5/198	3175	115/3900	OHV-S6/7.2:1
Customline Eight	1869.50	115.5/198	3270	130/4200	OHV-V8/7.2:1
Crestline Eight	1974.50	115.5/198	3280	130/4200	OHV-V8/7.2:1
Hudson					
Jet	1858	105/181	2675	104/4000	LH-S6/7.5:1
Wasp	2256.11	119/201.5	3440	126/4000	LH-S6/7.5:1
Super Wasp	2465.84	119/202	3525	140/4000	LH-S6/7:1
Hornet	2768.86	124/208	3620	160/4000	LH-S6/7.5:1

Make	Price	Wheelbase O'all Length	Approx. Weight	Max. HP at RPM	Engine Type† Comp. Ratio
Kaiser-Willys					
Kaiser					
DeLuxe		118.5/214	3210	118/3650	LH-S6/7.3:1
Manhattan		118.5/216	3275	140/3900	LH-S6/7.3:1
Willys					
Ace		108/181	2778	115/3650	LH-S6/7.3:1
Eagle		108/181	2947	115/3650	LH-S6/7.3:1
Lark		108/181	2061	90/4200	FH-S6/7.8:1
Lincoln					
Lincoln	$3522	123/215	4245	205/4200	OHV-V8/8:1
Lincoln Capri	3717	123/215	4245	205/4200	OHV-V8/8:1
Hydra-Matic transmission is standard equipment in all Lincolns.					
Mercury					
Mercury	$2250.50	118/204	3515	161/4400	OHV-V8/7.5:1
Mercury Monterey	2332.50	118/204	3515	161/4400	OHV-V8/7.5:1
Nash					
Statesman Super	2158	114/202	3070	110/4000	LH-S6/8.5:1
Ambassador Custom	2595	121/209	3480	130/3700	OHV-S6/7.8:1
Rambler	1795	108/193	2650	90/3800	LH-S6/7.3:1
Oldsmobile					
"88" Series	2337.09	122/205	3692	170/4000	OHV-V8/8.25:1
Super "88"	2476.71	122/205	3734	185/4000	OHV-V8/8.25:1
"98" Series	2805.82	126/214	3846	185/4000	OHV-V8/8.25:1
Packard					
Clipper DLxe	2695	122/215	3795	165/3600	LH-S8/8:1
Clipper Super	2815	122/215	3830	165/3600	LH-S8/8:1
Cavalier	3344	127/216	4060	185/4000	LH-S8/8:1
Patrician	3890	127/216	4190	212/4000	LH-S8/8.7:1
Ultramatic transmission standard in all Patrician models.					
Plymouth					
Plaza	$1765	114/193.5	3036	100/3600	LH-S6/7.1:1
Savoy	1872.50	114/193.5	3036	100/3600	LH-S6/7.1:1
Belvedere	1953.25	114/193.5	3036	100/3600	LH-S6/7.1:1
Pontiac					
Chieftain Six	2026.64	122/202.5		115/3800	LH-S6/7:1
Chieftain Eight	2101.62	122/202.5		127/3800	LH-S8/7.7:1
Star Chief	2301	124/213.5		127/3800	LH-S8/7.7:1
Studebaker					
Champion Custom	1801.11	116.5/199	2870	85/4000	LH-S6/7.5:1
Commander DLxe	2179.13	120.5/203	3266	120/4000	OHV-V8/7.5:1

† Key to Engine Type:
OHV-S6: Overhead valve, straight six
OHV-V8: Overhead valve, V8
LH-S6: L-head valve, straight six
FH: F-head

* Prices include suggested retail list price, federal excise taxes, and delivery and handling charges. But they don't include transportation, state and local taxes, or optional equipment.

called extras in the advertised price. For example, both Hydra-Matic transmission and power steering are standard in all Cadillacs this year. Hydra-Matic is standard in Lincoln models, PowerFlite is included with all Chrysler 8-cylinder cars, and Ultramatic with the Packard Patrician and some other models, and Dynaflow on Buick Roadmasters.

At the same time, last week Nash reduced prices along all lines, but dropped the radio and heater as "standard" from the Rambler lines. It was a good try on Nash's part but the Rambler was the only car on the road with these two items included in list price. Apparently the extra $145 was too much a burden to impose on the Rambler in price comparisons.

Heater Is First

So in buying a car, the purchaser starts with the advertised delivered price. First, transportation charges must be added to this. Then he can figure state and local charges before he adds the first extra.

Chances are, this will be a heater. They come as low as around $40 for Ford and Chevrolet, but go over $80 in more expensive models. Next is probably a radio. The least expensive listed is $61.25 on a Chevrolet, although Chevy has better ones too. They can go as high as $141.90 for a "Selectronic" job with electric antenna.

The third most popular option is an automatic transmission, although as stated above, it might be included in the price of more expensive models. But it will cost $178.35 for a Chevrolet, Pontiac or Oldsmobile; $184 on a Ford; $145 for Plymouth's semi-automatic PowerFlite; $189 on a Dodge or De Soto or Mercury; and $192 on a Buick, to show the range. Independents charge somewhere within that range.

Power steering units vary in cost from the General Motors price of $134 up to $170 for some of the independents. Power brakes start at $36 for Chrysler Corp. to $49 for GM models. These options are offered in almost every line with the exception of some independents.

Automatic seat and window lifts are becoming increasingly popular, but systems vary too much to generalize on price. Some seat adjustments are 4-way, others just vertical. In some models they are tied in with window lifts in one price package. Some automatic window lifts are only for front seats.

Keep Cool

Then there are the other options ranging from slight cost for a glare proof mirror to air conditioning which costs $594 on an Olds, Buick or Pontiac, $620 on a Cadillac, $647 on a Packard, and $642 for Chrysler, Dodge or De Soto.

If you are buying your car by the size or pound, Plymouth has the shortest wheelbase, 114 in. and the Chrysler Imperial the longest, 133½ in., nosing out the Cadillac 60 by a scant ½ in. The Cadillac 60 is the heaviest sedan, 4492 lb followed by the Imperial at 4355 lb. The Studebaker Champion is the lightest at 2870 lb. Limousines or 8-passenger cars were not included in the comparison nor were the Nash Rambler or Willys, which are still grouped in a class by themselves, although both are getting big and powerful enough to be considered full size cars.

If you are buying power, Chrysler has the edge with 235 against Cadillac's 230, although an argument can be raised anywhere about "useful horsepower." But there are now five cars that offer 200 plus hp.

Automotive Production

(U. S. and Canada Combined)

WEEK ENDING	CARS	TRUCKS
Feb. 6, 1954..	114,495*	22,166*
Jan. 30, 1954..	119,094	25,584
Feb. 7, 1953..	122,896	23,913
Jan. 31, 1953..	125,283	24,006

*Estimated. Source: *Ward's Reports*

THE BULL OF THE WOODS By J. R. Williams

I KNEW YOU COLLECTED CRAZY THINGS WE DID ON SHOP TIME WHEN YOUNG, BUT WHY EXHIBIT ONLY WHAT BOSSES DID?
IMPORTANT PEOPLE! NOBODY IS INTERESTED IN WHAT GUYS LIKE ME DID-- CARL WANTS TO PUT IT IN HIS SALOON WINDOW!
TH' BULL SOLED THEM SHOES WITH OLD BELTIN' YEARS AGO AND THEY PROVE HE WAS NEVER ON HIS TOES--ALWAYS DRAGGIN' HIS HEELS! HE'LL NEVER LET 'EM GET TO ANY SALOON WINDOW!
2-12
J R WILLIAMS
THE COLLECTOR
Copr. 1954 by NEA Service, Inc. T. M. Reg. U. S. Pat. Off.

Built For Better Production

Hardtem Die Blocks

Here's what Hardtem Die Blocks mean to Better Production!

1. They're tough . . . they resist impact stress.
2. They withstand heat.
3. They are uniform in hardness.

Here's why Hardtem Die Blocks assure better results!

1. They're built of a special patented Heppenstall Steel.
2. They're carefully forged and heat treated to provide the wear resistance for which they are recognized throughout industry.
3. Their quality is under constant study and development by Heppenstall's Engineering and Research staff.

Make Hardtem your standard die block specification. Heppenstall Company, Pittsburgh 1, Pa. Sales offices in principal cities.

H

Heppenstall

. . . the most dependable name in die blocks

South Protests Bond Interest Tax

Southern congressmen attack planned tax on interest on industrial development bonds . . . Ways & Means Committee may be forced to back down on decision—By G. H. Baker.

Congressional tax-writers find they have stirred up more trouble than they'd bargained for in their decision to seal off the tax loopholes that permit southern cities and states to lure northern firms from high-cost areas.

As a result of loud protests from southern congressmen, the tax-framing House Ways & Means Committee may be forced to reverse its earlier (and tentative) decision to make the interest on the industrial development bonds issued by state and city governments subject to federal taxes.

Interest on such bonds is not now subject to federal taxes. Because of this provision, many southern cities and states have been able to float large bond issues which have been used to finance construction of industrial plants. These plants are then made available to business firms at rental figures far below what they would have to pay in Northern areas.

Not Regional . . . The Eisenhower Administration is trying to make it very plain to labor unions as well as to industry that it does not intend to be stampeded into precipitate action in coping with unemployment on a regional basis. Instead, it plans to act positively in treating unemployment and any other economic problems on a national basis during the current period of what Treasury Secretary Humphrey calls "rolling adjustment."

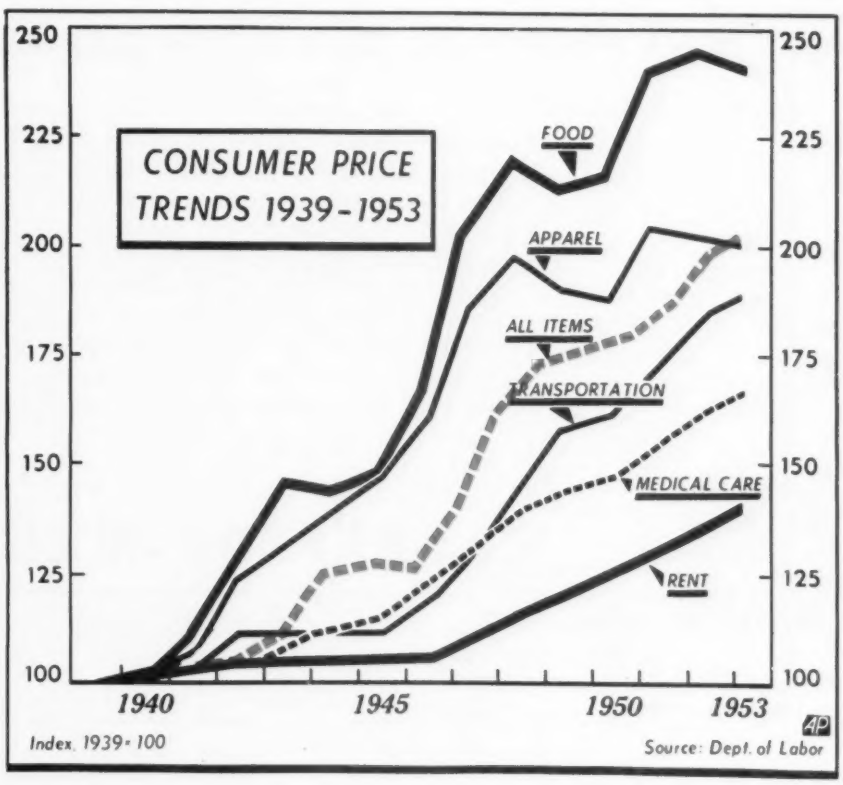
Words like "recession" or "adjustment" certainly do not imply the same conditions in all industries at the same time. Temporary set-backs in certain industries or in certain areas are not being ignored by the White House, but neither are they causing any undue hysteria. The Administration's goal is to lend whatever aid is necessary to keep production and consumption rolling at a healthy clip on a nationwide basis but to leave business alone as much as possible.

Foster Overall Health . . . The trend of economic thinking along these lines came into sharper focus last week with President Eisenhower's expression of his "deep conviction" that the U. S. can emerge from its present transitional "war-to-peace" economy without interfering with national growth or the continued rise in the U. S. standard of living. Mr. Eisenhower's views were made known in a letter to Walter Reuther, president, United Auto Workers, who had asked the White House to create a national committee to deal with unemployment problems.

The President did not reject the Reuther proposal but he made it clear that he believes his Administration is already well-equipped with economic experts who are not sitting by idly. He wrote that he was well aware that some areas are suffering "economic hardships," and pointed out that his Administration has adopted as one of its basic principles a firm determination to act only on issues that bear on the nation generally, and to keep its nose out of problems that are essentially local or regional matters.

"I believe that the most important attack on these situations is from the standpoint of fostering the overall health and vitality of our economy," he said. "It is with that principle in mind that the economic program of this Administration has been formulated."

Turn Page



INCREASE HORSEPOWER CAPACITY 40%

. . . and give you more use per dollar

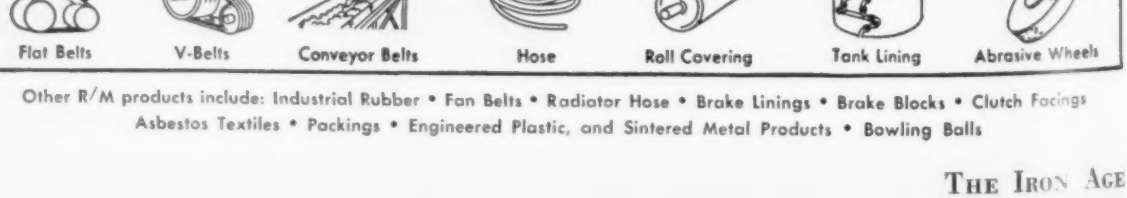
The combination of new synthetic fibers in the strength member of R/M Super-Power V-Belts assures greater resistance to shock loads, virtually no stretch, and practically eliminates matching problems. This, along with our straight side-walls, means better tensioning and grip, less slippage . . . more power delivered on the drive. Compared with regular V-belts you can handle approximately 40% greater load with the *same number* of R/M Super Power V-Belts or do an equal job with *fewer*.

Another plus . . . these V-belts are oil-proof, non-spark and heat-resistant. Send for Bulletin 6628. Ask the R/M distributor to show you how R/M Super-Power V-Belts will deliver "More Use per Dollar" on your drives . . . Condor V-Belts continue to be the standard for regular service.

R/M

MANHATTAN RUBBER DIVISION — PASSAIC, NEW JERSEY

RAYBESTOS-MANHATTAN, INC.



Other R/M products include: Industrial Rubber • Fan Belts • Radiator Hose • Brake Linings • Brake Blocks • Clutch Facings
Asbestos Textiles • Packings • Engineered Plastic, and Sintered Metal Products • Bowling Balls

Seaway Chances Good . . . Shifting political tides have turned in favor of St. Lawrence seaway bills pending before Congress. Seaway legislation, if permitted to come to a vote in the House next month, faces excellent prospects of winning approval of a powerful Republican-Democrat coalition.

Strong White House backing for U. S. participation with Canada in the construction of the seaway is causing some former opponents of the project to switch their votes. Opposition, centered among congressmen from East Coast ports, railroad centers, and coal-producing areas, still is formidable. But unofficial showings of hands point toward final House endorsement by a substantial majority.

Other congressmen, who have opposed the project principally on grounds of its high cost to the U. S. Treasury, now are being won over by reason of a new provision in the bill which requires that construction costs be obtained from tolls. Under this provision, all revenue collected from seaway users would be held for payment of special-issue seaway bonds. Says Rep. McGregor, R., Ohio, "Under this plan, the seaway won't cost the U. S. taxpayers a cent."

Cut Back Thunderstreaks . . . Aiming toward a more modern armada of fast fighter planes, the Air Force is buying a greater number of North American F-100 Super Sabre aircraft to replace some of the F-84F Thunderstreaks previously on order.

Cancellations will total less than 15 pct of the Republic Aviation F-84Fs produced or on order, the Air Force says. Engine and airframe difficulties were named as the factors behind the decision to cut back procurement of the slower jet fighters.

Lower Engine Orders . . . F-84F production scheduled for Republic's Farmingdale, L. I., plant will not be affected by the cutback. Output at the General Motors facility in Kansas City, Kan., is to continue into the fall of 1955, as was planned from the start.

Decreased requirements for the F-84F have prompted the Air Force to lower orders for the J-65 engine, which powers this fighter. Production by Curtiss Wright Corp. at Woodridge, N. J., and by Buick Motors Div. of GM at Flint will be about equally reduced.

Hunting:

Amount sportsmen spend on equipment hits $3 billion.

Game hunting is big business and getting bigger. It's so big that the 1953 increase in hunters will alone provide a $200 million shot in the arm for the sporting goods business. About one-half this increase will go for small arms and ammunition.

Numbers of hunters venturing forth at least once a year with bag and gun adds up to a bigger total than the number of personnel in the Armed Services during World War II.

What do they hunt? Anything. A substantial number are content to go after small game such as rabbits, squirrels, and wildfowl, but the dyed-in-the-wool hunter goes for big game.

Contrary to popular belief, big game is far from extinct in the U. S. Both hunters and government conservation agencies, backed by flexible game laws, aim to keep it that way.

Best available information indicates that the big game population ranges around 12 million animals, not counting 7500 buffalo which may not be hunted.

Statistics provided by the Fish & Wildlife Service show that last year the number of hunting licenses issued by the 48 states, Alaska and Hawaii fell just short of 14.9 million.

This was a gain of nearly 1 million over the previous year and continues an uptrend which has been evident since the end of World War II.

Importance of hunting and fishing to business is the fact that sportsmen spend about $3 billion per year for guns and other sporting goods supplies.

Based on best available figures, the average hunter spends $100 a year on guns and ammunition, including ammo for skeet shooting and target practice. A seasoned hunter won't settle for a single weapon but constantly adds to the variety.

Easily another $100 a year is spent on related equipment and supplies, ranging from hunting knives to tents, canteens to canoes.

"Gentlemen, I think we can settle this out of court."

Talk Over New Trade Rules

Plumbing and heating equipment manufacturers have been invited to confer with Federal Trade Commission representatives in Chicago on Feb. 19 concerning new trade practice rules.

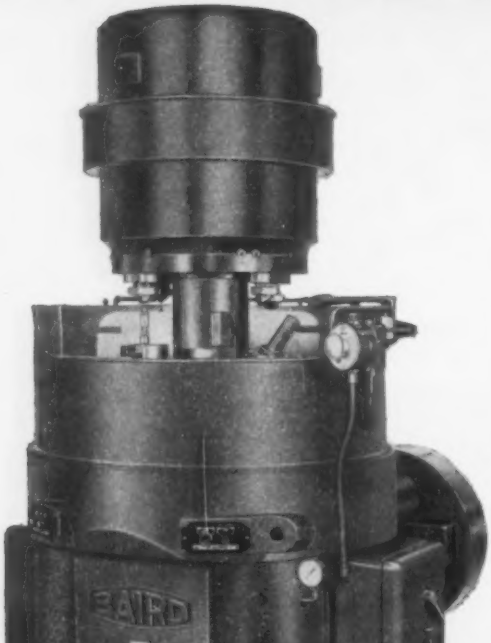
The industry's Trade Practice Rules Committee has drafted suggested rules to replace those issued originally by FTC.

The drafted rules will be the basis for the talks. Any industry member may offer criticism, orally or in writing, or propose new operating standards.

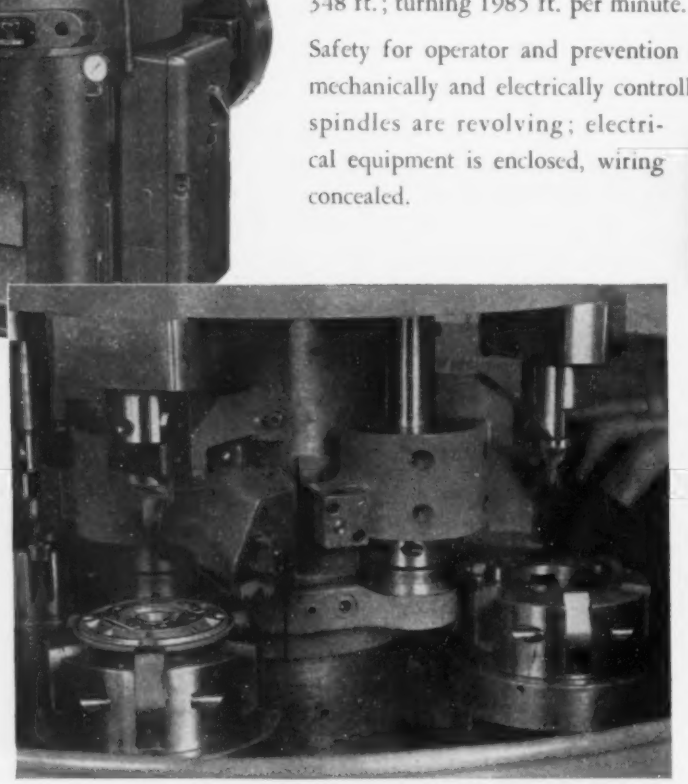
Before FTC approves final rules, it will make available a draft of proposals to persons affected, including consumers. The agency also will conduct a public hearing at which those interested may give their views.

ASK **BAIRD** ABOUT IT!

HIGH PRODUCTION TOOLING



(Above) Front view, showing splash guards for wet cutting.



(Right) Tooling set-up for finishing a generator end plate.

TOOLS MOVE HORIZONTALLY, OTHERS VERTICALLY, FOR FACING . . . TURNING

. . . and that's but one of the excellent features of Baird's No. 54VC (5" chuck, 4-spindle, vertical continuous lathe). As the turret revolves, eliminating unproductive indexing time, holding fixtures grip and release automatically for easy loading and unloading. Tools feed in and out of the cutting stroke.

This typical Baird tooling set-up bores the hole, faces and chamfers the hub, and turns the flange of a generator end plate. Cycle time 19.48 seconds, 5 seconds per piece, 720 per hour. Feed: boring hole and facing hub .0039" . . . turning flange .005" and .002" (forming tools). Cutting speeds: boring 348 ft.; turning 1985 ft. per minute.

Safety for operator and prevention of machine and product damage are mechanically and electrically controlled; tools cannot feed to work unless spindles are revolving; electrical equipment is enclosed, wiring concealed.

BEFORE AND AFTER

FEATURES BAIRD 4-SPINDLE VERTICAL LATHE

1. Compact design.
2. Easy to tool and operate.
3. Simple . . . dependable.
4. Extremely accurate.
5. Unusually versatile.
6. Outstanding production records.

Installation of Baird automatic machines is a step in the right direction against tough competition. "Ask Baird about it!"

the **BAIRD MACHINE COMPANY**
STRATFORD • CONNECTICUT

AUTOMATIC MACHINE TOOLS • AUTOMATIC WIRE & RIBBON METAL FORMING MACHINES • AUTOMATIC PRESSES • TUMBLING BARRELS

Delta Wing Research Nears Payoff

First U.S.-built production models of F-102 jet interceptor due to come off Convair line next month . . . Titanium improves plane's performance—By *T. M. Rohan.*

Six years of aerodynamic research in delta-wing aircraft neared the payoff stage in California last week.

The first U.S.-built production models of the F-102 supersonic delta-wing all-weather jet interceptors were due to roll off the line next month at Consolidated Vultee's San Diego plant.

The 31-year-old firm is banking a large stack of chips on the new model. A company spokesman last week told THE IRON AGE that Convair confidently expects the F-102 to become the standard U. S. all-weather interceptor for the next few years and prototype for the next 10.

On the other hand, a Lockheed engineer recently delivered a speech entitled "Deltas Not for Lockheed" while a Douglas spokesman straddled the fence by saying both deltas and conventional types have their places.

More Powerful Engines . . . Although the delta wing dates back to research by Convair and the National Advisory Committee for Aeronautics in the 30's in addition to studies by the Germans, lack of a powerful enough engine held back development of the design, according to Convair officials.

With addition of heavy electronic equipment to fighter planes during the Korean War and gradual emergence of interceptors into the supersonic range over 700 mph, Convair officials believe the delta-wing F-102 offers solution of hitherto unsolved aerodynamic problems.

Titanium Used . . . Improvements in metals have played a large part in development of the F-102. Titanium has greatly improved the plane's performance by keeping strength at relatively high temperatures caused by air friction. Titanium is also heavily used in the power plant equipped with an afterburner giving the Pratt & Whitney J-57 engine and afterburner a rating of about 10,000 lb thrust.

Despite extreme thinness, wings are exceptionally strong due to delta configuration and use of new steel and aluminum alloys.

Convair's design 3 years ago was one of three models selected for development out of 12 submitted by six companies in a major Air Force design competition and strengthened the firm's resolve to stick with the delta type. Prototypes have been flying at Edwards Air Force base in California since late 1953 with first production models scheduled for testing as completed. The first prototype was damaged in a wheels-up landing.

Flying Classrooms . . . Other Convair planes in production on the firm's 2-year, $1 billion backlog are T-29C and T-29D two-engine "Flying Classrooms" for Air Force bombardiers and navigators and C-131A "Samaritan," air evacuation transports.

Navy planes in production are the startling Sea Dart, delta-wing jet seaplane interceptor, and the R3Y Tradewind turbo-prop reconnaissance ship.

New Tube Redraw Bench . . . The West's largest steel tubing redraw bench, intended to enlarge sizes of locally produced mechanical tubing to 6.5 in. outside diam, went into operation in Los Angeles last week.

Pacific Tube Co., West Coast affiliate of Superior Tube, put a new 150,000-lb pull Aetna-Standard bench in operation which will enlarge available diameters and handle lengths to 52 ft. The draw bench, costing about $154,000, is a single-chain, single-draw, mandrel-rod, two-speed type, with rated output of 110 fpm.

President E. H. Lloyd told IRON AGE last week Pacific Tube has been working three shifts, 5 days per week to fill demand.

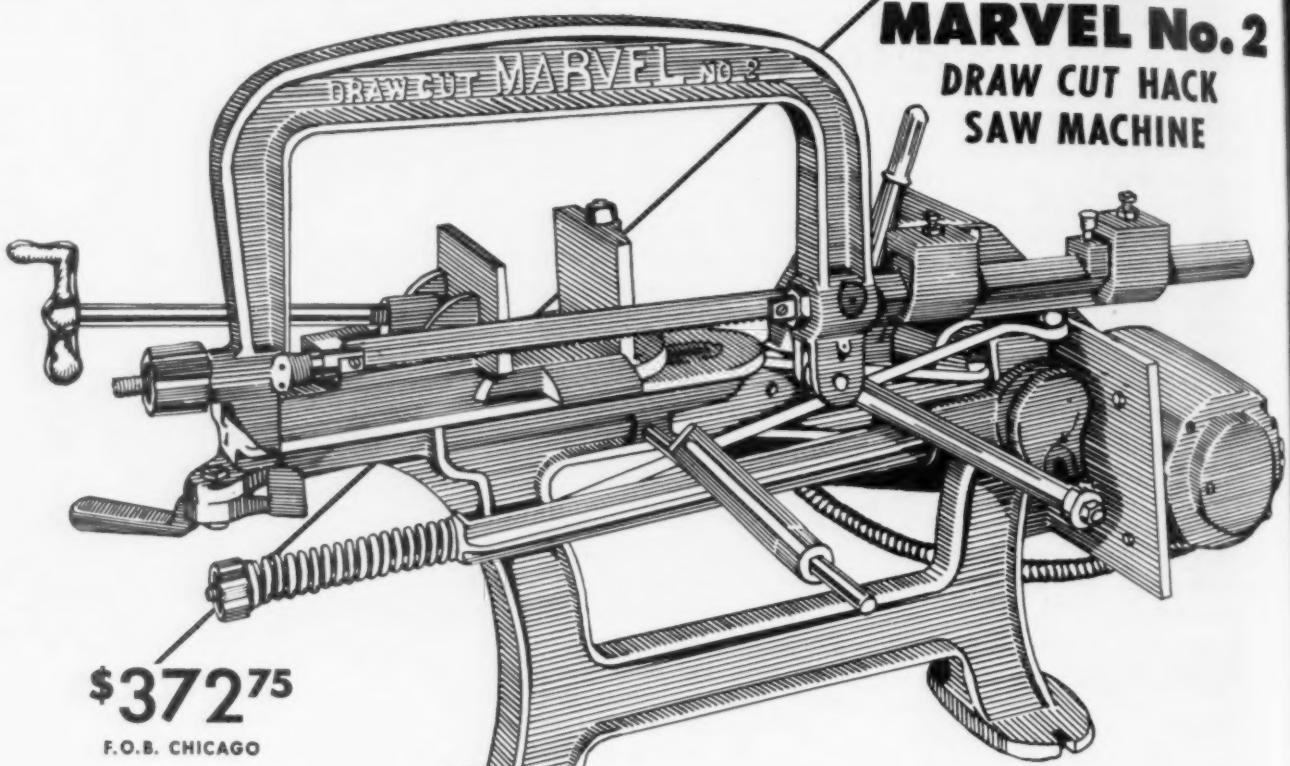
CONVAIR will soon be turning out production models of the F-102 jet.

For... General-Purpose Sawing

FAST—ACCURATE—ECONOMICAL—DRY CUTTING

Capacity up to 8" round

Improved
MARVEL No. 2
DRAW CUT HACK SAW MACHINE



$372.75
F.O.B. CHICAGO

See your Dealer. If he does not stock MARVEL Saws, he can get them quickly. Or simply write us for literature and delivery. When buying hack saw blades insist that your dealer furnishes genuine MARVEL High-Speed-Edge Hack Saw Blades—they are unbreakable!

Fast... because the simple, rugged construction permits the use of high speed steel blades.

Accurate... because the improved Saw Frame with clamping type blade holders holds the blade in perfect alignment and proper tension.

Economical... because of its automatic relief on the return stroke, the blade will last and last and last.

Dry Cutting... because modern high speed steel blades will operate efficiently at 60 strokes per minute without a coolant.

MARVEL *Metal Cutting* **SAWS**
Better Machines-Better Blades

ARMSTRONG-BLUM MFG. CO. · 5700 Bloomingdale Ave. · CHICAGO 39, ILL.

Builders Keep Eyes on Washington

Congressional action on corporation taxes, depreciation, renegotiation, tariffs will have strong affect on industry . . . What builders want—By E. J. Egan, Jr.

Biggest news affecting the machine tool industry this year will most likely come from Washington. Congressional decisions on corporation taxes, depreciation allowances, renegotiation formulas and tariffs are in the making. Any firm legislation on these matters will have a major influence on the industry's future.

The House Ways & Means Committee, designated to write a new omnibus tax bill, has reportedly approved President Eisenhower's suggestion for more liberal depreciation allowances. This would permit buyers of capital equipment to use a declining-balance method of depreciation at rates double those permitted under the present straight-line method.

Want It Optional . . . But machine tool builders have long sought approval of a system of optional depreciation as the best stimulant for U. S. industrial progress. Under this system the taxpayer would be able to recover his capital over the period he elects, in a manner he designates. Because of current Government revenue requirements, the builders would not object to a proposal limiting recovery permitted in the first year to 50 pct.

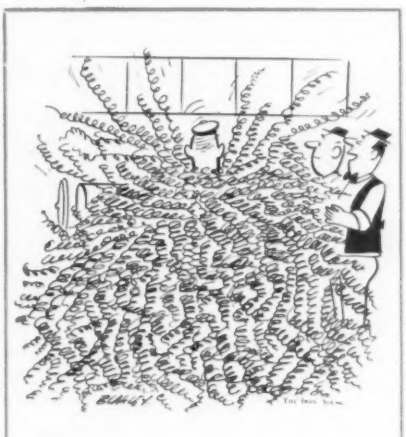
Realizing the House committee's tax bill faces many challenges and possible changes before it is signed into law, National Machine Tool Builders' Assn. continues to press proposals for tax revisions. NMTBA views are outlined in a booklet recently prepared for the convenience of members of Congress and other Washington officials.

End Double Tax . . . In addition to the request for a system of optional depreciation, the industry urges elimination of the "double taxation" of corporate earnings as soon as possible. As a first step, NMTBA proposes stockholders be allowed a tax credit equal to 30 pct of dividends received. For corporations, the request is to raise the credit for dividends received from 85 pct to 100 pct.

Another recommendation concerns research and development expenditures. It specifies that, at the taxpayer's option these expenses should be deductible from gross income in the tax year they were incurred. If the taxpayer prefers, he should be permitted to capitalize these expenditures and recover them over a period of 2 or more years.

A final NMTBA suggestion would amend Section 102 of the Internal Revenue Code, which imposes a surtax on improperly accumulated surplus.

More for Civilians . . . Machine tool manufacturers may now schedule 60 pct, instead of 40 pct, of orders for most metalworking machinery for shipment to nondefense users.



"Keep an eye on young Cantrell here, the kid's really production minded."

Exceptions are jig boring, jig grinding, jig milling, and milling machines No. 4 and larger. Manufacturers must still reserve 70 pct of this productive capacity for defense orders.

In revising M-41 last week to eliminate all but four types of tools from Exhibit B (previously Exhibit D) and to reverse the defense order ratio on others, Business & Defense Services Administration was carrying out a recommendation made by the industry's advisory committee last October.

Better Balance . . . Production of most machine tools and metalworking machinery has reached a fairly normal balance between supply and demand. Only the four listings of Exhibit B, M-41, are still regarded as critical.

Atomic Energy Commission will still continue to get metalworking machinery and equipment on a priority rating basis out of nonmilitary production.

Figures released by BDSA indicate the industry has reduced its overall backlog from $846 million as of last June 30 to less than $724 million as of last Dec. 1.

Shipments averaged $99 million during 1953, reaching a high of $111 million last March and a low of $79 million in July.

Gear Orders Up . . . Volume of orders for the gearing industry increased 33.9 pct in December, 1953, as compared with November of last year. Data compiled by the American Gear Manufacturers Assn. shows the index for December at 194.0.

Ralph E. Cross, executive vice-president of Cross Co., Detroit, has been named director of the Metalworking Equipment Div., Business and Defense Srevices Administration. Mr. Cross has already assumed his new post in Washington, with offices in the main Commerce Dept. building.

JONES & LAMSON REPORTS ITS RESEARCH ON COST-CUTTING IN THE metal turning INDUSTRY

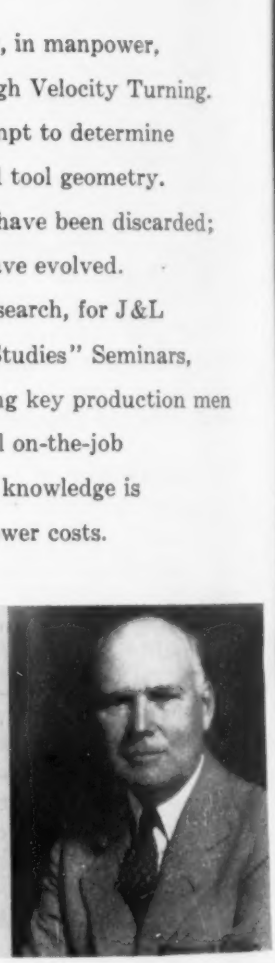
Jones & Lamson Research is Paying Off — For All of Industry!

Here are the facts:

- Over the past eight years, J&L has invested heavily, in manpower, money and facilities, to probe the possibilities of High Velocity Turning.
- More than 12,000 tests have been made, in an attempt to determine the relationships of metals, cutting speeds, tools and tool geometry.
- The results are staggering: many long-held theories have been discarded; new techniques, new tools, new cutting standards have evolved.
- *All* of industry is benefiting from this program of research, for J&L freely shares its findings. In two-day "Production Studies" Seminars, held periodically at Springfield, Vt., groups of visiting key production men are given a comprehensive briefing, and study actual on-the-job demonstrations. Back at their own plants, this new knowledge is translated into better quality, higher production, lower costs.

"Our findings indicate that throughout industry, metal-cutting efficiency can be increased from 30% to as much as 300% – often with existing machines – by using new High Velocity Turning techniques. Seldom has industry been offered as great an opportunity to cut costs".

JOHN E. LOVELY
Vice President & Chief Engineer
Jones & Lamson Machine Co.



PRODUCTION P.S. STUDIES → *J&L's new movie, "Research in Metal Cutting", has been described by E. Willard Pennington, Editor of "Tooling & Production", as "the finest industrial movie I have ever seen." Available for showing, on request.*

JONES & LAMSON MACHINE COMPANY
SPRINGFIELD, VERMONT, U. S. A. • TURRET LATHES • FAY AUTOMATIC LATHES
THREAD GRINDERS • OPTICAL COMPARATORS • THREADING DIES

REPORT TO MANAGEMENT . .

Heft GAW club

Guaranteed annual wage is a cudgel labor has fingered menacingly in the past. But up till now union strongboys haven't lifted it to shoulder height. Practice has been to threaten, then settle for a wage increase.

Now it appears labor may be doing more than just taking practice swings.

Who'll get hit

Several of industry's bluechips (U. S. Steel, Bethlehem, General Electric) recently received multi-paged questionnaires from CIO unions requesting information on employee layoffs over the last 16 years.

This means GAW heavyweight Walter Reuther is getting in shape for a slugfest--wants all the facts he can find to point up instability of employment.

First outright wrangle on GAW may be at GE this April. CIO Electrical Workers Union has already said it will make this an issue in spring contract negotiations.

Why the new push?

Reasons for labor's new push on guaranteed annual wage stem partly from: (1) Current unemployment rise, (2) probability minimum wage will not be upped from present 75¢ per hour level.

Management's counterpunch

Strategy management will use in the GAW infighting is already taking shape. Industry leaders will argue GAW is just another form of unemployment insurance with the ugly difference that it discriminates, giving additional benefits only to workers in certain industries.

They'll suggest increasing the amount put into state unemployment insurance funds if current benefits aren't enough.

Ike's not the only one

Not all the economic happy talk is restricted to Washington. Survey by Dun & Bradstreet of 1315 top executives showed 46 pct believe dollar sales in the second quarter will top even '53's strong April-June period. Only 22 pct expect a dip.

On employment, 80 pct believe they will have the same number of workers. Most expect inventories will be down.

Slump can mean sales

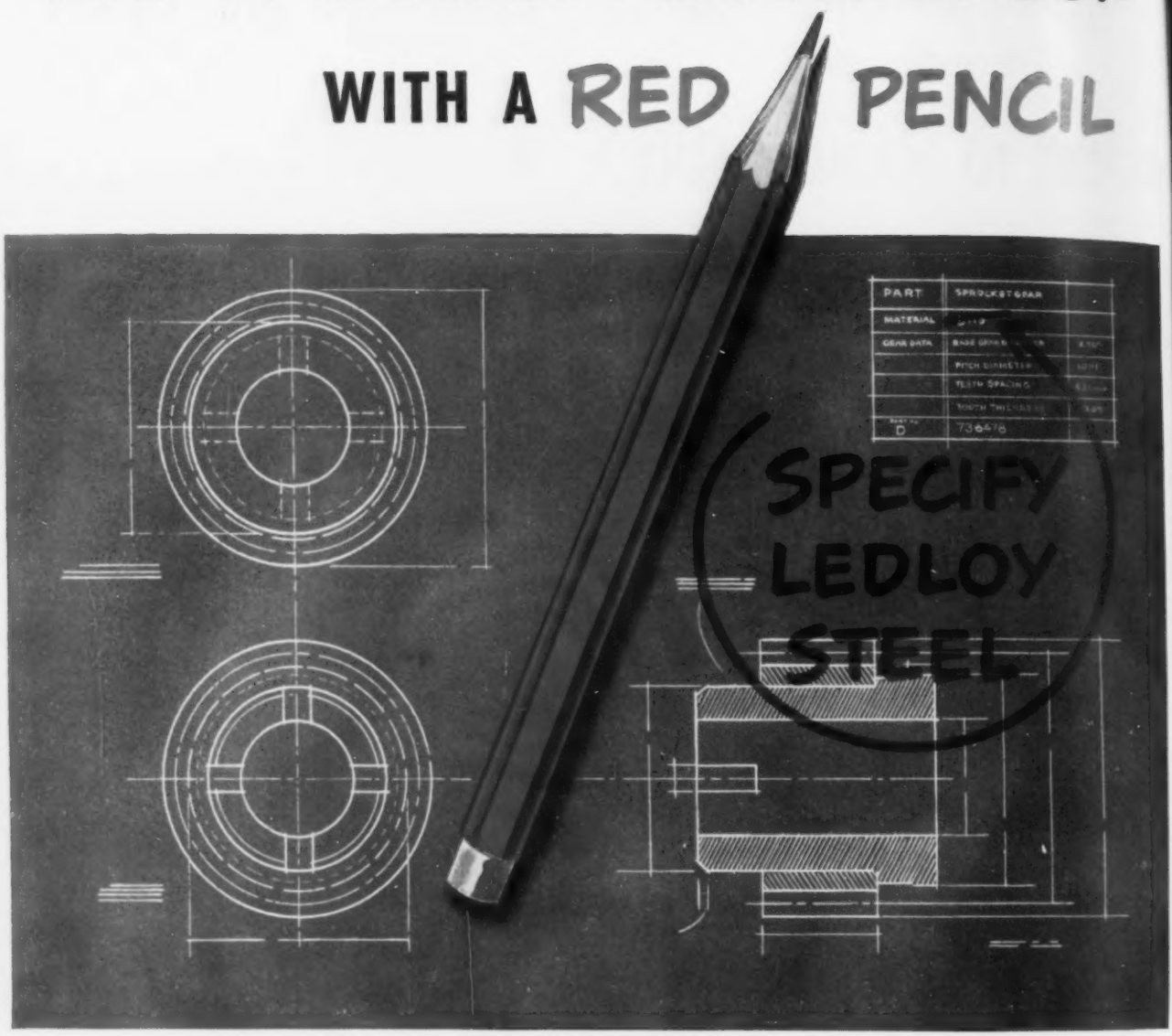
When are bad times good? If you make accounting and statistical equipment. One such manufacturer believes a general business decline such as predicted by most economists would mean a 17 pct sales gain for his firm.

Says management examines its operations more closely during business dips, wants more facts faster. So statistical equipment sales mount.

A coffee-er car

Signs of times sign: Southern used car dealer is advertising top grade coffee at $600 per lb, with auto thrown in.

HOW TO INCREASE PRODUCTION 35% WITH A RED PENCIL



● Ledloy* feeds faster . . . permits higher speeds . . . increases tool life 40 to 50 per cent . . . vastly improves finish. Actual case histories show that for many automatic screw machine or similar operations, production can be increased 35 to as high as 75 per cent. And in all instances, mechanical properties such as yield strength, tensile strength, ductility and heat treatment are not affected.

Examine your product. Are you specifying the best material? Writing in Ledloy can improve production for you.

Similar advantages are also obtainable through the use of leaded alloy steels which are available in the full range of A.I.S.I. or S.A.E. standard analyses. For assistance or information regarding the application of leaded steel to your products, call our field representative.

ARISTOLOY STEELS

*Inland Ledloy License

COPPERWELD STEEL COMPANY
WARREN, OHIO

THE

Delpark Junior

BRINGS

Greater Savings

TO MACHINES WITH 1/4 TO 1 1/2 G.P.M. COOLANT FLOW

Greater savings through better finish, greater accuracy and more production are possible with the DELPARK Junior Coolant Filter on machines with low coolant flows.

Newest in a famous line, the DELPARK Junior now brings to the machine with small coolant flow, individual filtration with all the efficiency of the larger DELPARK Automatic Filter.

SAVINGS? . . . There are savings in the low cost DELPARK Junior . . .

—*Savings* in greater accuracy and better finish through free-cutting wheel or tool action . . .

—*Savings* in greater machine efficiency and production . . .

—*Savings* in labor and material . . .

—*Savings* in rejects . . .

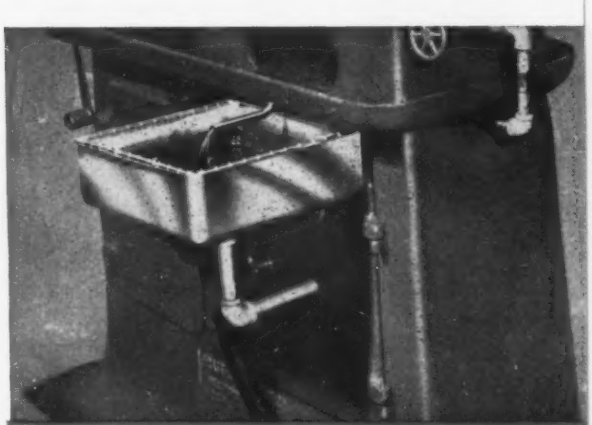
—*Savings* in grinding wheels and tools . . .

—*Savings* in maintenance and machine parts . . .

—*Savings* in coolants . . .

—and *Savings* in numerous other production and operation phases.

Write today for the new DELPARK JUNIOR BULLETIN.



Delpark Junior installation on gear hobber. Coolant flows through tray and returns to machine through lower pipe.

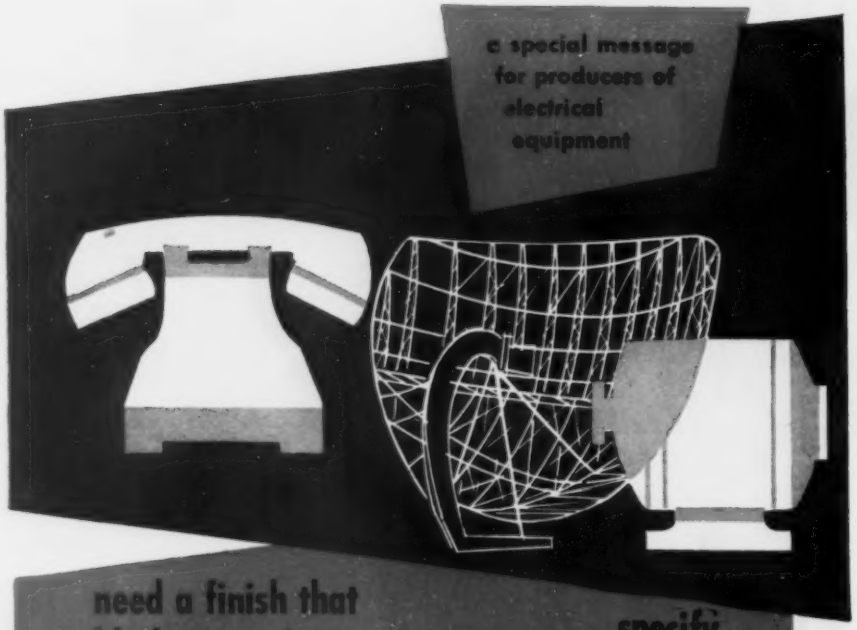
Delpark Junior serving small grinder. Unit rests on top of coolant tank and releases filtered coolant into reservoir.

Delpark

INDUSTRIAL FILTRATION

Backed by more than 30 years experience in Industrial Filtration

INDUSTRIAL FILTRATION COMPANY, 91 INDUSTRIAL AVENUE, LEBANON, INDIANA



need a finish that blocks corrosion, maintains conductivity? specify IRIDITE®

Here's peak corrosion protection combined with conductivity, weldability and solderability. Here's a finish that holds paint firmly, prevents underfilm corrosion. Here's a line of attractive final finishes to add quality and sales-appeal. Here's Iridite . . . and here's how you can use it:

ON ZINC AND CADMIUM you can get highly corrosion resistant finishes to meet any military or civilian specifications and ranging in appearance from olive drab through sparkling bright and dyed colors.

ON COPPER . . . Iridite brightens copper, keeps it tarnish-free; also lets you drastically cut the cost of copper-chrome plating by reducing the need for buffing.

ON ALUMINUM Iridite gives you a choice of natural aluminum, a golden yellow or dye colored finishes. No special racks. No high temperatures. No long immersion. Process in bulk.

ON MAGNESIUM Iridite provides a highly protective film in deepening shades of brown. No boiling, elaborate cleaning or long immersions.

AND IRIDITE IS EASY TO APPLY. Goes on at room temperature by dip, brush or spray. No electrolysis. No special equipment. No exhausts. No specially trained operators. Single dip for basic coatings. Double dip for dye colors. The protective Iridite coating is not a superimposed film, cannot flake, chip or peel.

WANT TO KNOW MORE? We'll gladly treat samples or send you complete data. Write direct or call in your Iridite Field Engineer. He's listed under "Plating Supplies" in your classified telephone book.

Iridite is approved under government specifications

ALLIED RESEARCH PRODUCTS
INCORPORATED
4004-06 E. MONUMENT STREET • BALTIMORE 5, MD.

Manufacturers of Iridite Finishes for Corrosion Protection and Paint Systems on Non-Ferrous Metals, ARP Plating Chemicals.
WEST COAST LICENSEE: L. H. Butcher Co.

—Free Publications—

Continued

Time delay relay

Complete line of solenoid-actuated, pneumatically-controlled time delay relays is described in new catalog. Catalog describes two basic types of Agastat relays: one with time delay beginning when the coil is energized; and one with time delay beginning when the coil is de-energized. Mounting dimensions, wiring diagrams and typical applications, from elevator and traffic controls to jet plane ignition systems, are listed. *Elastic Stop Nut Corp. of America.*

For free copy circle No. 13 on postcard, p. 99.

Information aids

New folder released by D. A. Stuart Oil Co. contains Dilut-O-Graph and Cutting and Grinding Fluid Selector. Dilut-O-Graph makes possible controlled mixture of cutting and grinding fluids in tanks of odd capacities and gives formulas for determining tank capacities of both rectangular and cylindrical tanks. *D. A. Stuart Oil Co.*

For free copy circle No. 14 on postcard, p. 99.

Dewatering filter

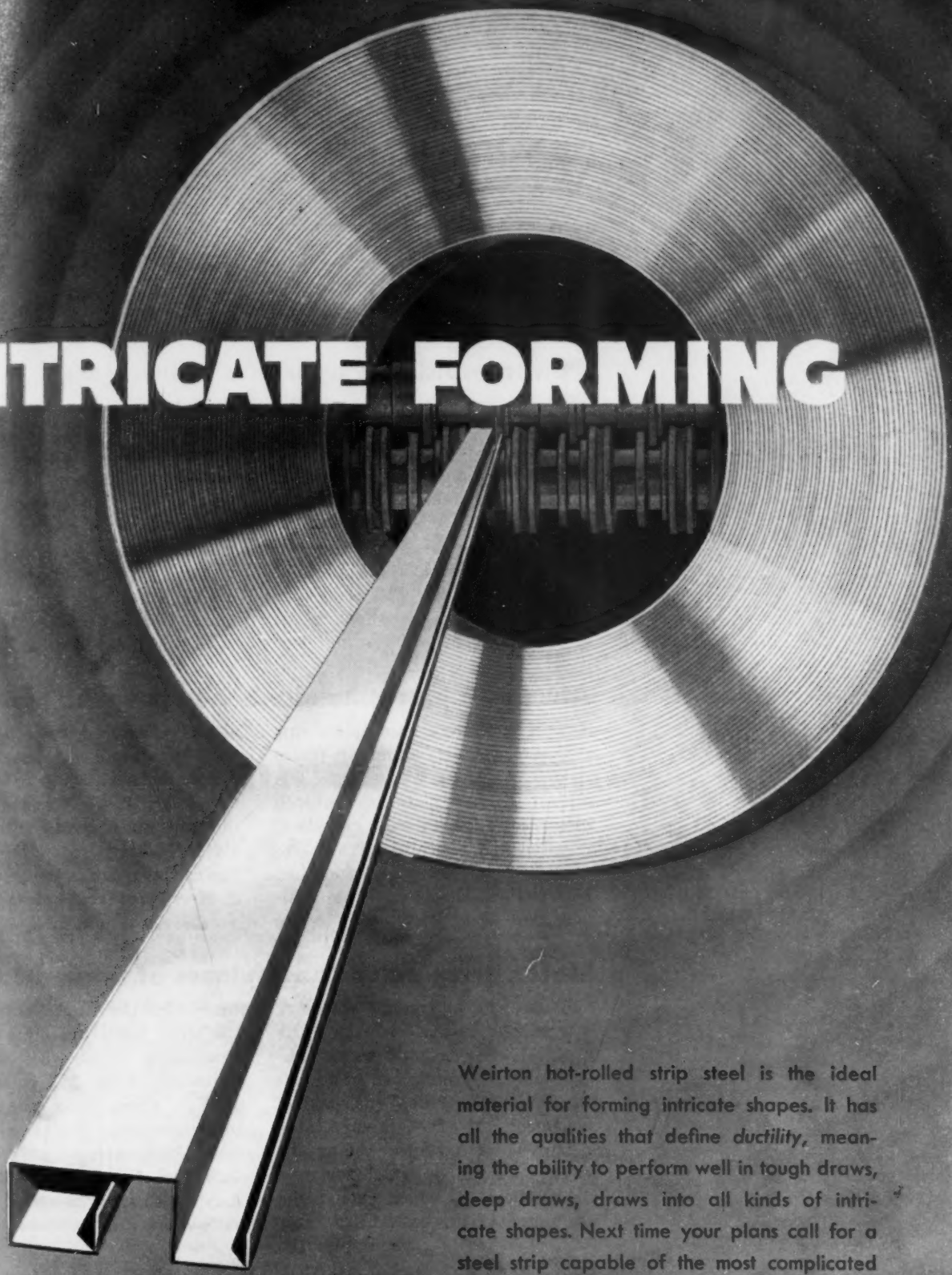
Hardinge Co., Inc. has just published a 4-p folder describing new and radically designed dewatering filter known as *Hardinge Tray Belt Filter*. Bulletin includes complete operating details as well as discussion of the applications and operational advantages of the new filter over conventional types. The company expects one filter to have a number of applications for continuous liquid-solids separation in the mining, chemical and industrial fields. *Hardinge Co., Inc.*

For free copy circle No. 15 on postcard, p. 99.

Scale drawings

Of special interest to design engineers, draftsmen and layout engineers, is the announcement of a new set of Scale Drawings for Geared Slo-Speed Electric Power Drives. Folder includes 22 separate sheets with each sheet numbered for easy refiling. Three views of the Slo-Speed Drive are detailed on each page with the frame and type drawn to 3 separate scales. *Sterling Electric Motors, Inc.*

For free copy circle No. 16 on postcard, p. 99.



INTRICATE FORMING

Weirton hot-rolled strip steel is the ideal material for forming intricate shapes. It has all the qualities that define *ductility*, meaning the ability to perform well in tough draws, deep draws, draws into all kinds of intricate shapes. Next time your plans call for a steel strip capable of the most complicated forming—call Weirton and be sure.

hot rolled strip steel from WEIRTON STEEL COMPANY

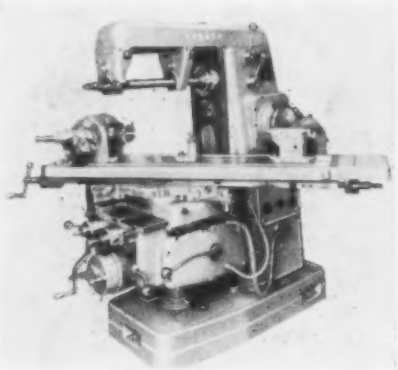
Weirton, West Virginia

WEIRTON STEEL COMPANY

NATIONAL STEEL CORPORATION

NEW EQUIPMENT

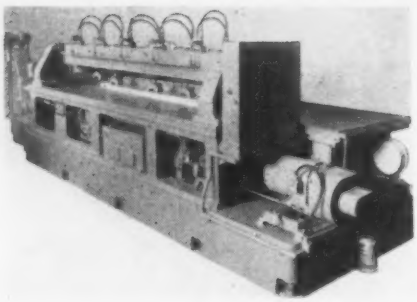
New and improved production ideas, equipment, services and methods described here offer production economies . . . just fill in and mail the postcard on page 99 or 100.



Power rapid traverses in all directions

Dial type high speed universal milling machines feature forward and reverse power rapid traverses in all directions. No. 50 taper in the spindles allows interchange of cutting tools with all domestic millers. The table has a wide range of automatic feeds up to 26 ipm; rapid traverse rate is 71 ipm. Visual oil control is supplied for all moving parts including lead screws, arbor, etc. All controls are placed in front of the knee for easy access and operation. This miller is built in sizes 2, 3 and 4. All machines have tapered roller bearing spindles. Hardened and ground gears assure easy control. Heavy vertical attachment and universal dividing head are standard equipment. *Graham Machine Tool Co.*

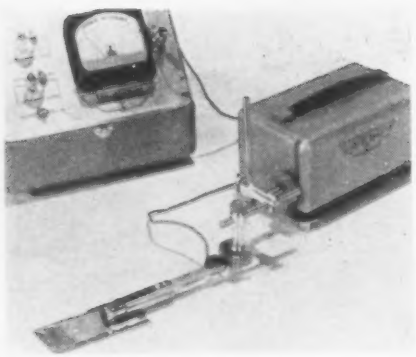
For more data circle No. 17 on postcard, p. 99.



Aluminum plates handled on high speed plate saw

New M & M high speed plate saw accurately handles aluminum plates up to 4 in. thick x 12 ft long. The surface of the plate is equipped with free rollers in small cylinders, actuated hydraulically to raise the stock from the surface of the table. This enables the operator to position the stock more easily. The stock is clamped by a heavy rail with direct-acting hydraulic cylinder hold-down clamps. A single-speed saw head is mounted on a dovetail slide beneath the table. Coolant sump, chip compartment and conveyor are in the base. *Motch & Merryweather Machinery Co.*

For more data circle No. 18 on postcard, p. 99.



Motor drive extends usefulness of Surfindicator

New mechanical tracing accessory is available for use with the Surfindicator, an instrument which measures surface roughness. The motor drive provides mechanical movement of the Surfindicator pickup along a surface being inspected. It is designed for special applications which extend the usefulness of the basic Surfindicator beyond the range that is practical with hand operation. A reciprocating stroke whose length is adjustable from 2⅞ to less than 1/16 in. allows for a wide range of measurements. Stroke speed is ⅛ ips. Constant speed and low vibration level assure accurate measurements. *Brush Electronics Co.*

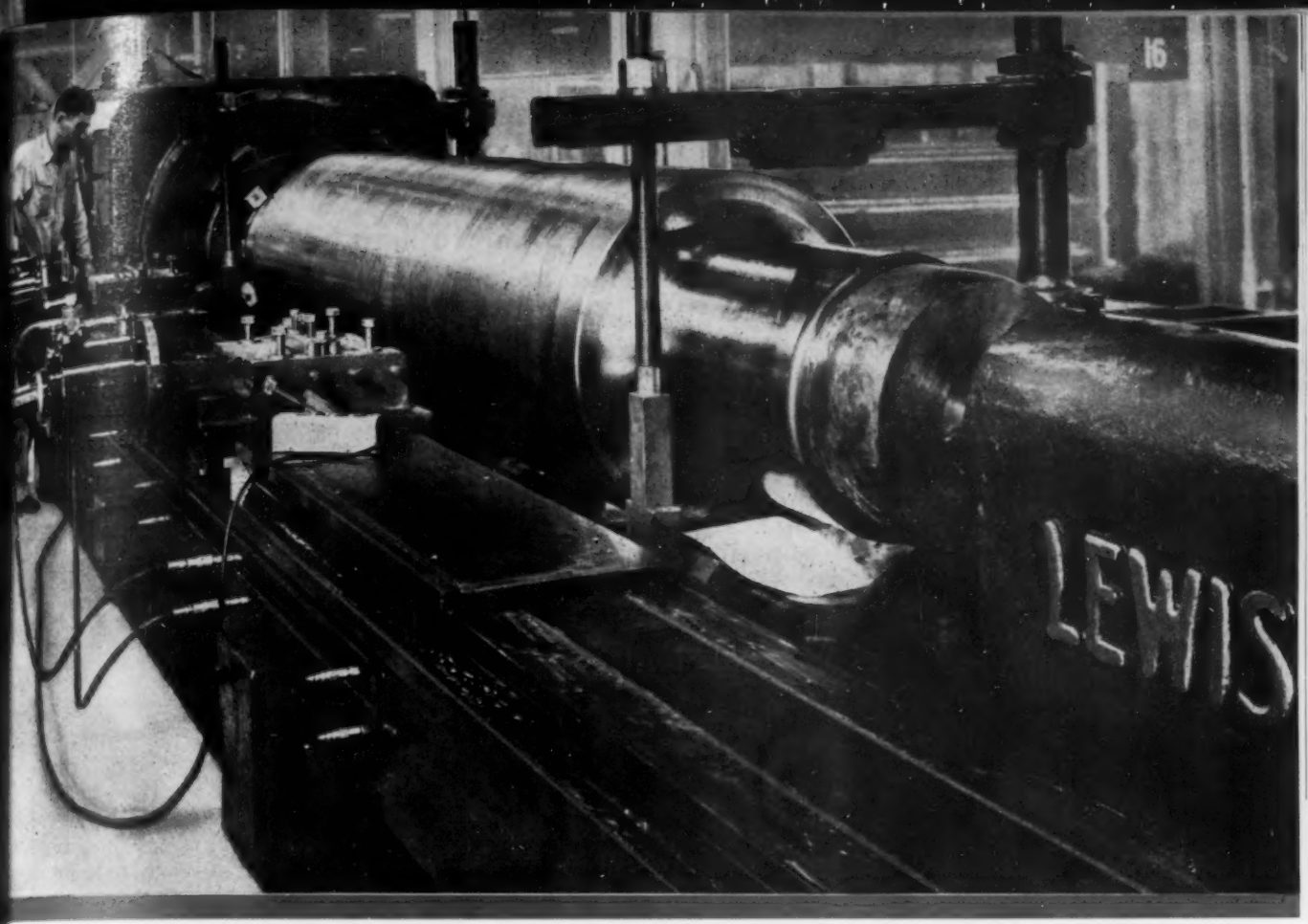
For more data circle No. 19 on postcard, p. 99.

New lift truck provides all-weather traction

A completely new 15,000-lb capacity lift truck, Model RC-150, mounted on 8.25 x 20 pneumatic tires, is powered by a heavy-duty watercooled industrial engine. It features an exclusive engineering achievement to assure unmatched job performance in adverse ground conditions. All-weather traction is said to be the result of integrated design combining features such as balanced weight, greater power and large size tires, to enable the truck, loaded or unloaded, to negotiate roughest terrain. Safety, serviceability, operator comfort and ease of operation are built in the new truck. *Hyster Co.*

For more data circle No. 20 on postcard, p. 99.

Turn Page



. . . reduces machining costs as much as 75 per cent

When you have to remove considerable metal, this new Lewis Hydraulic Roll Lathe reduces roll turning costs as much as 75 per cent.

By means of three hydraulically controlled movements, the roll machining operation is converted from a recurrent manual task to a practically continuous manual operation.

One—hydraulic control makes it possible in machining to use two tools, eight inches wide, with cuts up to ⅜ inch in depth, across the full face of the roll. And provides a constant, even pressure of the cutting tool against the roll, which increases tool life.

Two—lateral movement of the cutting tool enables the operator to make one continuous spiral cut that travels along the entire length of an even-faced roll . . . thereby eliminating unnecessary set-up time. Two tools can be used, cutting from the same side of the roll and traveling in the same direction. Traverse movement of the cutting tools can be in either direction.

Three—hydraulically controlled movement of the tailstock eliminates what used to be a difficult, time-consuming job that required the efforts of at least two men and sometimes the use of a crane.

At your convenience we will be glad to give you more complete information about the design and performance of this new Lewis Hydraulic Roll Lathe . . . which can be built in any size to customer requirements. And to offer you the assistance of our experienced engineers and our manufacturing facilities to help you with any problem which includes rolling mill machinery.

new LEWIS hydraulic ROLL LATHE

BLAW-KNOX

BLAW-KNOX COMPANY • LEWIS MACHINERY DIVISION
PITTSBURGH 22, PENNSYLVANIA

LEWIS PRODUCTS: Two-High Mills • Three-High Mills • Four-High Mills • Bar and Billet Mills • Rod Mills • Coilers • Tables • Shears • Levelers • Pinion Stands • Gear Drives • Roll Lathes • Flaking Mills

Three methods of microfilming use 16 or 35 mm film

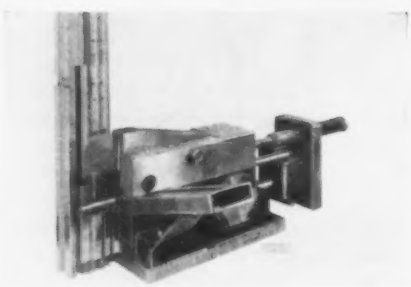
New Recordak Supermatic microfilmer provides three methods of microfilming, five different reduction ratios, and a choice of either 16 or 35 mm film. The three accepted methods of microfilming are standard, duo and duplex: the standard utilizes the full width of the film for each exposure; the duo photographs the fronts of documents down one-half of the film width, and then up the other half; the duplex method simultaneously photographs fronts and backs of documents, side-by-side on the film. Interchangeable lens assemblies for the film unit provide the reduction ratios. A precision-built automatic feeder feeds over 500 items per min. Controls are conveniently located above desk level. *Recordak Corp.*

For more data circle No. 21 on postcard, p. 99.

Tools simplify strapping flat sheet metal

Hydraulic stretching and sealing tools for centralized package strapping include power unit, hydraulic stretcher and sealer, and electrically powered band dispenser. Feature of the new tools is the reduction in operator fatigue made possible by power operation. The stretcher design permits use of strapping directly from the coil, rather than in cut lengths. This is said to reduce strapping consumption by approximately 10 pct. Strapping tension is uniform and can be adjusted to meet requirements. This equipment has been developed for the strapping of flat sheet metal and finds application wherever ferrous or nonferrous sheets are packaged for shipment. Tools are available for ¾ or 1¼ in. wide steel strapping, 0.028 to 0.035 in. thick. *Acme Steel Co.*

For more data circle No. 22 on postcard, p. 99.



Loaders speed output of broaching machines

Automatic loaders are designed to speed output of externally broached round parts on conventional dual ram vertical broaching machines. Made in a wide variety of types to accommodate specific parts, they feature magazine feeds and simple, compact feed, clamp and eject mechanisms. No auxiliary power source is required to actuate the loader mechanisms since in-and-out travel of the broaching machine tables imparts motion to the loader feed and clamp components. *National Broach & Machine Co.*

For more data circle No. 23 on postcard, p. 99.

Automatic wet blaster for fast, uniform finishing

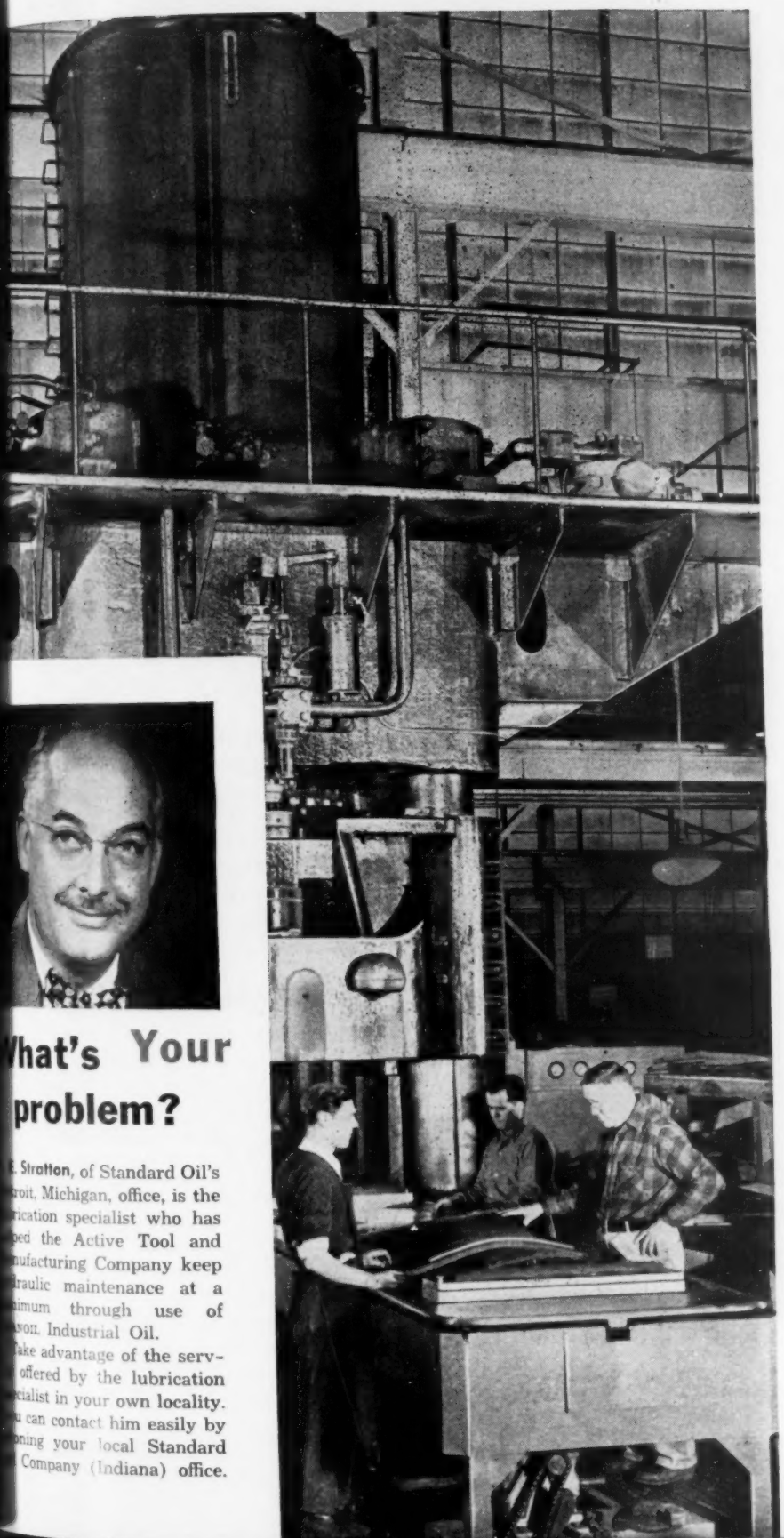
The pressure blast Roto-Matic was designed for the elimination of hand filing, grinding, wire brushing and chemical cleaning of small metal parts such as castings, forgings, machined items, stampings, extrusions, and various plastic and ceramic components. The operator sits at the front of the unit and merely loads and unloads workpieces from the rotating table which incorporates appropriate workholding fixtures. The cabinet interior is divided into three chambers accessible from all sides by means of inspection doors: the blast chamber where fixed position guns finish the work in part or entirely; rinse chamber where abrasive slurry is rinsed from the work; the air-dry chamber where the workpieces are dried. Simple, accessible panel contains all necessary controls for operations. A variable speed table drive regulator governs the exact amount of time the work is to be blasted. No pumps or mechanism of any kind are employed in the blast system. *Cro-Plate Co., Inc.*

For more data circle No. 24 on postcard, p. 99.

Turn to Page 110

STANOIL
TRADE MARK
Industrial Oil

How they keep hydraulic maintenance to a minimum



● Officials of the Active Tool and Manufacturing Company, Detroit, Michigan, count on trouble-free hydraulic operation of this giant press. They place much of their confidence in the performance of STANOIL Industrial Oil—and with good reason.

Recommended by a Standard Oil lubrication specialist, STANOIL has served in the hydraulic system of this press for over four years. In all of that time, it has not been necessary to replace the original fill of oil nor has the hydraulic system once needed to be cleaned. Periodic tests of oil samples have shown that STANOIL, despite hard service and high oil-operating temperatures, has maintained a lubricating quality comparable with new oil.

You, too, can rely on this unique, versatile oil to give you clean, dependable service, in a wide variety of equipment. The Standard Oil lubrication specialist serving your area of the Midwest will be glad to show you operating records covering the many applications of STANOIL. Phone him at your local Standard Oil office. Or, write: Standard Oil Company, 910 S. Michigan Ave., Chicago 80, Illinois.

What's Your problem?

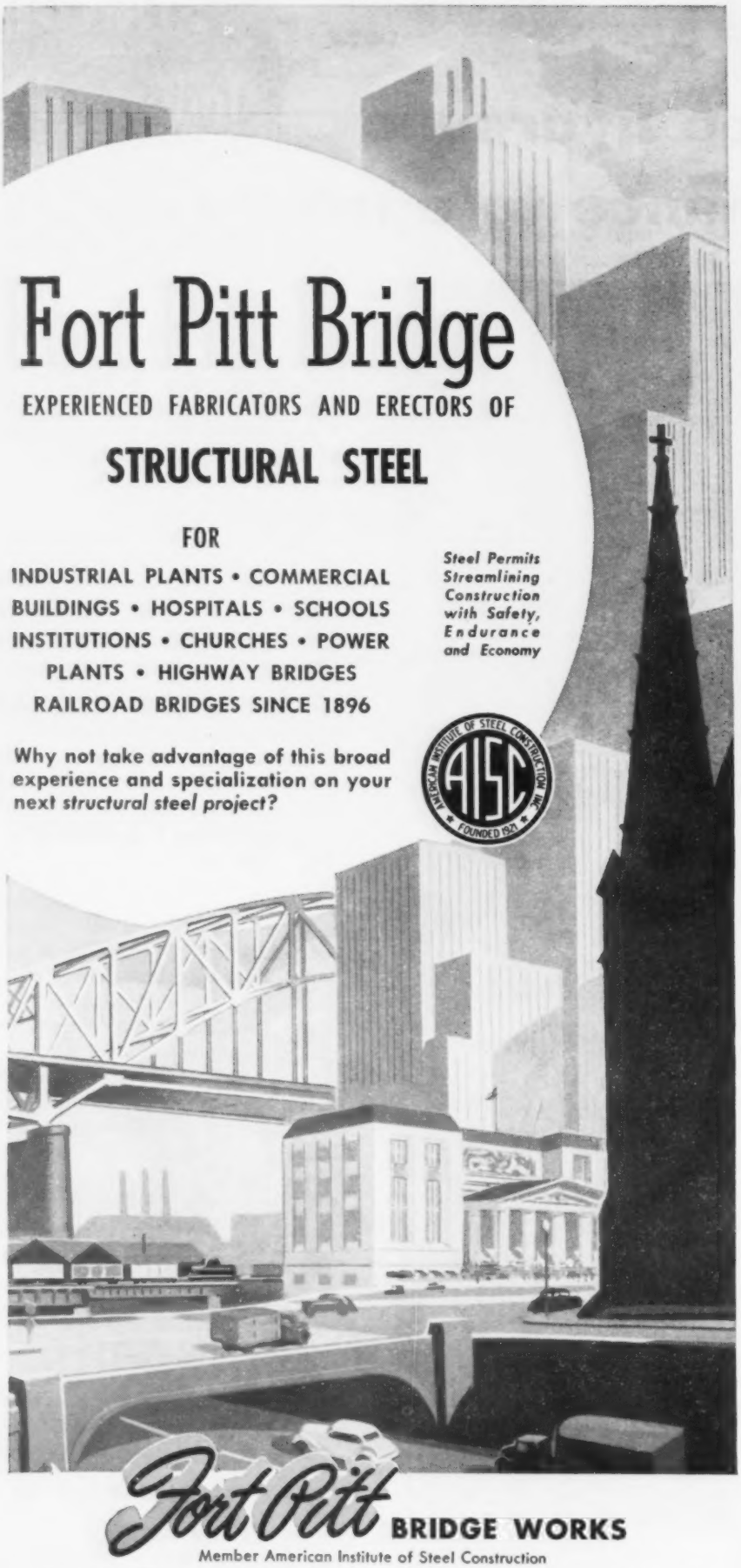
E. Stratton, of Standard Oil's troit, Michigan, office, is the rication specialist who has ped the Active Tool and nufacturing Company keep draulic maintenance at a imum through use of ANOIL Industrial Oil.

ake advantage of the serv- offered by the lubrication cialist in your own locality. u can contact him easily by ning your local Standard Company (Indiana) office.

STANDARD

STANDARD OIL COMPANY

(Indiana)


Fort Pitt Bridge
EXPERIENCED FABRICATORS AND ERECTORS OF
STRUCTURAL STEEL
FOR
INDUSTRIAL PLANTS • COMMERCIAL
BUILDINGS • HOSPITALS • SCHOOLS
INSTITUTIONS • CHURCHES • POWER
PLANTS • HIGHWAY BRIDGES
RAILROAD BRIDGES SINCE 1896
Steel Permits Streamlining Construction with Safety, Endurance and Economy
Why not take advantage of this broad experience and specialization on your next structural steel project?
AISC
AMERICAN INSTITUTE OF STEEL CONSTRUCTION INC.
FOUNDED 1921
Fort Pitt BRIDGE WORKS
Member American Institute of Steel Construction
General Offices, PITTSBURGH, PA. • Plant at CANONSBURG, PA.
District Offices:
NEW YORK, N. Y. • CLEVELAND, OHIO • DETROIT, MICHIGAN

—New Equipment—

Continued

Stamping press

A 50-ton high speed automatic stamping press feeds, blanks and stamps thin aluminum foil up to heavy materials available in coil stock. Revertomatic adjustable speed drive permits clutching the press at low speed and building up to a predetermined high speed at an adjustable rate. Intermittent feed roll brake in rhythm with the machine in automatic operation is

cam actuated to give braking when necessary. Feed rolls are built as an integral part of the machine for closest relationship to the die, infinitely adjustable through overrunning clutch from 0 to 15 in. feed. Speed is infinitely adjustable from 90 to 350 strokes per min, with the standard 3-in. stroke using a 7½ hp motor. With the special 8-in. stroke, the speed is 50 to 150 strokes per min. Dies are completely accessible on three sides. *Precision Welder & Flexopress Corp.*

For more data circle No. 25 on postcard, p. 99.

Barrel finishing chip

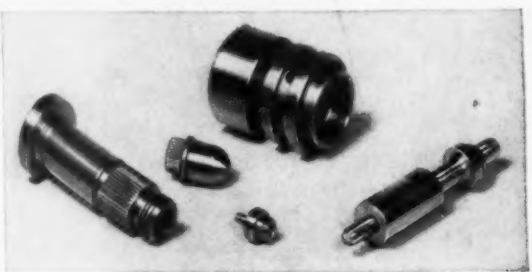
Called Novaculite, new precision barrel finishing chips have a conchoidal shape, irregularly formed with sharp edges and elongated points; will reach hard-to-get-at indentations without wedging or clogging holes, and will not change the work. Novaculite chips are said to produce a mild honing abrasive action for a smooth even finish without dents, burrs, or damage to stamped or cast parts. *Chicago Wheel & Mfg. Co.*

For more data circle No. 26 on postcard, p. 99.

Turn Page

For Atlantic Automatic Co., Cleveland, Ohio:

Tool Life Increased Over 200%!



PARTS FOR GEARS & CAR TRANSMISSIONS are just a few of the many delicate machine tool products Atlantic turns out. Cities Service Chillo Cutting Oil has helped Atlantic maintain their great reputation for quality products.

For the services of a Cities Service Lubrication Engineer... Write Cities Service Oil Company, Sixty Wall Tower, New York City 5, New York.

CITIES SERVICE
QUALITY PETROLEUM PRODUCTS

"Cities Service Chillo Cutting Oil Has Proved To Be The Difference Between Ordinary And Quality Production In Our Shop!"

Here's Atlantic Automatic's story in their own words: "One of our tougher jobs recently was machining SAE 446 Stainless Steel with two forming, one threading and three drilling operations. The critical operation was drilling a .025 inch diameter hole, ⅛ inch deep. The drill would soon pack with chips and break. When a Cities Service Lubrication Engineer was called in, he recommended our using Chillo 44.

"This light-colored oil did the trick. DOWN TIME WAS CUT IN HALF AND DRILL LIFE INCREASED OVER 200%!

"We use Cities Service Chillo 44 to machine all types of metals covering a range of machinability from brass to stainless on our Brown and Sharpe 00G, 0G and 2G Automatics. It has proved to be the difference between ordinary and quality production in our shop!"

Warning system for magnetic separators

Efficiency and usefulness of magnetic separators are enhanced by an automatic alarm system that virtually eliminates the possibility of human error. Magnalarm rings a bell, lights a light, stops a machine, giving industry protection by preventing overloading permanent magnetic separators which eliminate machine damage and product contamination. Magnalarm does its thinking by means of a sensitive ferrometer which constantly measures the quantity of tramp iron as it accumulates on the magnet's surface, and which reacts on a circuit to trip the alarm as soon as a predetermined accumulation is reached. Location of the alarm may be at the machine itself, or in a remote office, or both. Small amount of current required to operate the Magnalarm in no way affects the magnetic field of the Eriez separators. *Eriez Mfg. Co.*

For more data circle No. 27 on postcard, p. 99.

WORK MOVES FASTER
COSTS LESS with a Fray
No. 10-R UNIVERSAL RAM · TURRET TYPE · VERTICAL
MILLING MACHINE
You get a wider work range than with any other machine this size. You can machine at any angle—vertical, horizontal or both. You can mill, drill or bore at any angle. Hence resetting isn't necessary. Just change the machine—changing is quick. (For vertical and regular horizontal milling, use the 10-RH.) Jobs are done faster and better ... at less cost. • It's Universal • Rugged • Easy to Operate.
A high precision tool.
Write for details and specifications.
Bulletin 10.
FRAY "ALL-ANGLE" HEAD TYPE 4
For deep, heavy cuts. Permits working to extra close limits. Any angle up to compound 2-way. Request Bulletin 4.
FRAY
All-Angle
FRAY MACHINE TOOL CO.
2935 NO. ONTARIO STREET, BURBANK, CALIFORNIA

Threaded Spacer

Fragile structure fastening is simplified with a new threaded spacer. It features tapped sleeve which receives the attaching bolt and eliminates the need for a nut. This results in considerable weight saving per fastener, and faster, more convenient installation. No special tools are needed for installation. Spacers are made of 24 ST-3 aluminum alloy, anodized. *Delron Co., Inc., Fasco Div.*

For more data circle No. 28 on postcard, p. 99.

Signal lanterns

In promoting safety in and around industrial plants, signal lanterns for laneing traffic are proving invaluable. They meet every industrial traffic need ranging from single-bulb lanterns to 5-way intersection signals. These lanterns are equipped with aluminum reflectors, hoods and high-quality lenses and give brilliant signals under all conditions. Weatherproof and dustproof. *Lintern Corp.*

For more data circle No. 29 on postcard, p. 99.

Turn Page

LINK-BELT Silent Chain Drives
assure 3 big bonus benefits

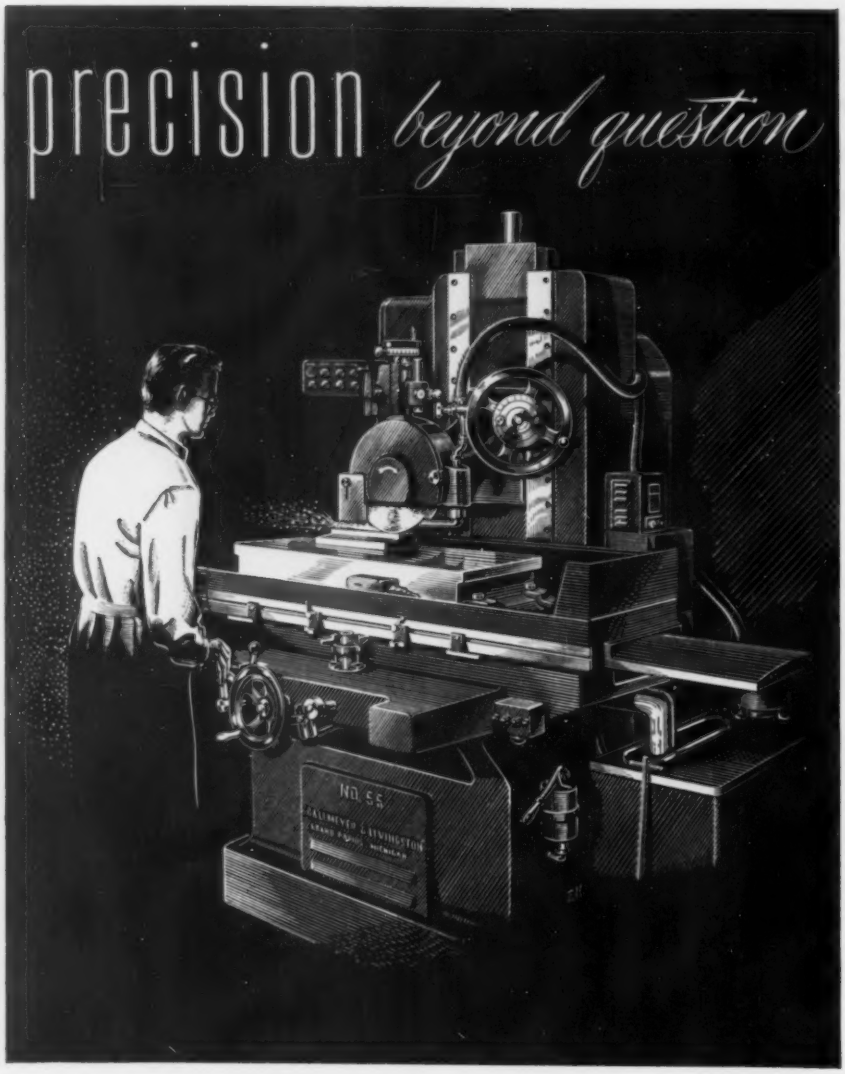
WHEN you buy a drive, you expect it to operate efficiently throughout its entire life. And with Link-Belt Silent Chain, you're assured of better than 98% *sustained* efficiency throughout its many years of service! What's more, these positive, no-slip drives are low in first cost . . . low in operating costs. And, with their ability to operate at higher speeds, you can reduce your investment in motors and controls. Link-Belt Silverstreak Silent Chain Drives are available from fractional to thousands of hp. You can obtain ½ to 50 hp drives (ratios of 1:1 to 7:1) from stock. Get complete information from your Link-Belt sales office or distributor.

LINK-BELT

SILVERSTREAK SILENT CHAIN DRIVES

13,242

LINK-BELT COMPANY: Plants: Chicago, Indianapolis, Philadelphia, Colmar, Pa., Atlanta, Houston, Minneapolis, San Francisco, Los Angeles, Seattle, Toronto, Springs (South Africa), Sydney (Australia). Sales Offices, Factory Branch Stores and Distributors in Principal Cities.



The requirements exacted of surface grinding machines leave no room for variation. Precision and tolerance control must be built-in. Through the years Grand Rapids Grinders have demonstrated the highest quality and unquestioned dependability of performance. Upon this record they have been accorded world-wide acceptance as standard of the industry. Here is precision beyond question.

GALLMEYER & LIVINGSTON CO., 200 Straight Ave., Grand Rapids, Mich.

GRAND RAPIDS GRINDERS

GALLMEYER & LIVINGSTON

MANUFACTURERS OF
SURFACE GRINDERS, CUTTER AND TOOL GRINDERS, TAP AND DRILL GRINDERS

Water repellent coat

Moisture resistance has been imparted to GE's Tri-Clad 55 motor, by means of a new silicon Dri-Film water repellent coating. Dri-Film 88 after-dip treatment is said to have extended motor life of the polyphase ac line six times by preventing formation of continuous moisture film on coils. Every stator assembly manufactured for the motor is submitted to this dip, making it water repellent with a single coat. *General Electric Co.*

For more data circle No. 30 on postcard, p. 99.

Indicator fuse

New indicator-repeating fuse has a neon indicator that lights up when the fuse ceases to function. There are six positions on the fuse, and a twist of the switch makes the fuse function again as a new fuse. Ratings are 15, 20, 25 and 30 amp. *Sightmaster Corp.*

For more data circle No. 31 on postcard, p. 99.

Stock clutch reel

A medium size wire and stock reel is designed with a 4-in. oscillating movement that reduces the load on the feed mechanism of the machine and, by means of a limit switch, automatically stops the machine in case of wire entanglement on the

reel. Used with medium size wire coils, the clutch reel is useful in shops where one operator handles more than one machine. Two sizes have capacities of 175 and 250 lb, 8 and 12 in. minimum ID, respectively. *A. H. Nilson Machine Co.*

For more data circle No. 32 on postcard, p. 99.

Turn Page

Alliance CAR DUMPER

Rugged

25 YEARS OF SERVICE AND STILL GOING STRONG

● This traveling car dumper at the Weirton, West Virginia, plant of the National Steel Corporation was built by Alliance in 1927. It has handled every carload of ore delivered to the Weirton plant since then. Designed to handle single cars, it dumps ore constantly at the rate of twenty-six cars per hour. Cars are spotted on the dumper by a locomotive.

The record of rugged dependability and economical service established at Weirton is typical of Alliance performance everywhere. Building safer, stronger and better machinery is the Alliance aim. It is our goal to make the name Alliance synonomous with quality, dependability and service.

Contact us for your heavy equipment.

Give Us The Runway And We'll Lift The World

THE *Alliance* MACHINE COMPANY

Main Office: Alliance, Ohio *Founded 1901*

LADLE CRANES · GANTRY CRANES · FORGING MANIPULATORS · SOAKING PIT CRANES
STRIPPER CRANES · SLAB AND BILLET CHARGING MACHINES · OPEN HEARTH CHARGING MACHINES · SPECIAL MILL MACHINERY · STRUCTURAL FABRICATION · COKE PUSHERS

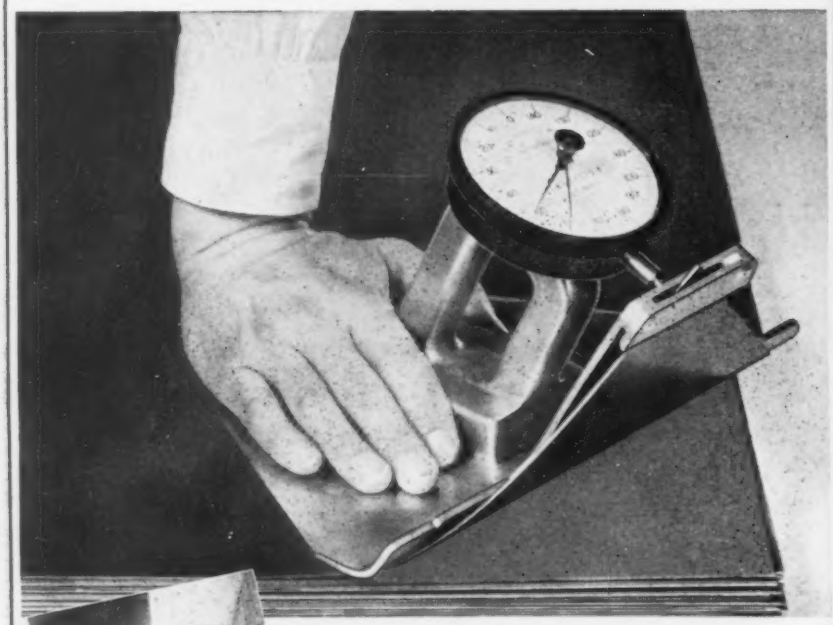
World's Largest Builders of the World's Largest Cranes

Leading Stamping Plants, Warehouses and Steel Mills NOW use . . .

FLEX-TESTER

FOR NON-DESTRUCTIVE TESTING OF SHEET METAL FOR DRAWING QUALITIES AND STRETCHER STRAIN

DEVELOPED BY JONES & LAUGHLIN STEEL CORP.
SOLD EXCLUSIVELY BY STEEL CITY



MANUFACTURERS OF MACHINES FOR TESTING PHYSICAL PROPERTIES OF METALS including BRINELL, DUCTILITY, UNIVERSAL, TENSILE, COMPRESSION, TRANSVERSE, HYDROSTATIC, SPECIAL TESTING MACHINES AND PROVING INSTRUMENTS

FLEX-TESTER does its job quickly. Can be used to select sheets suitable for forming desired part. User can save better material for more severe draws; use poorer grade for simpler work. Enables application of material of uniform quality. Determines need for roller leveling, particularly on exposed panels where stretcher strain is detrimental. Hand operated; light weight; easily carried. Proven in use on hundreds of jobs. Write for descriptive bulletin or demonstration in your plant.

Steel City Testing Machines Inc.

8815 LYNDON, DETROIT 21, MICH.

Die grinder

New 40,000 rpm die grinder has three bladed air motor with plenty of power for small burrs and mounted points. It features all steel construction, special select ball

bearings, one piece spindle and sliding sleeve throttle. This air pencil grinder weighs 13 oz, measures 5¾ in. long, 1 in. diam; collet, ⅛ or ¼ in. Tool post holder and steel heads without throttle are available. *Rotor Tool Co.*

For more data circle No. 33 on postcard, p. 99.

Positioning tool

Called the Magic Positioner, a universal holding fixture for production and welding operations consists of three 45-lb pull, neoprene covered, Alnico V, guaranteed permanent magnets. The magnets are held in a die-cast, high tensile aluminum frame and have full 360°

adjustment, which is regulated by a scale showing 5° graduations. When positioned, each magnet can be locked in place. This feature is said to provide for positioning the tool to conform to almost every conceivable welding operation, and the holding of almost every shape or design of metal. *Standard Portable Cord Co., Inc.*

For more data circle No. 34 on postcard, p. 99.

The Iron Age

SALUTES

John F. Schnur

His one-man Point Four Program makes friends for us abroad by passing on American know-how.

AMERICAN industrial techniques are one of our best weapons for making friends abroad. A teacher who tells you how to make what you want, rather than to want what you can't make, is always a valued friend.

A leader in this campaign is John F. Schnur, Armour Research Foundation foundry specialist. He is at present returning to India, where he will continue training foundrymen in a nation that recognizes him as a good friend.

John has devoted 16 years to developing and training metalworking specialists in Latin America and Asia. In the Netherlands West Indies he worked from 1931 to 1942 with Standard Oil Co. to train native workers for a foundry that he established and operated. Other service includes Nicaragua, China and India.

Beginning his foundry training in Aurora, Mo., young John added a list of unusual accomplishments, including knife throwing and slack wire walking with a traveling circus and a stint as a middleweight professional boxer.

Married and with a 14 year old son, John has taken his family with him to the far points of the world. Between traveling assignments, he has established a residence at Palatka, Fla. His hobby is officially golf, but his job doesn't allow him the practicing he would like.

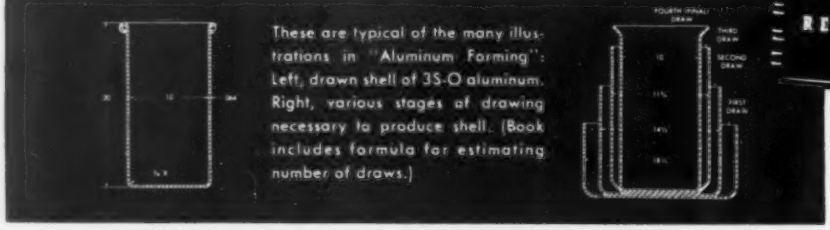
After 16 years, John's work abroad continues to grow in magnitude. He's already traveled across India suggesting improvements in existing foundry equipment and helping train Indian foundry workers. This month he's going back to found a training center for foundrymen from all parts of India. John Schnur's work is a strong voice in the advancement of the American idea among the free nations of the East.

"ALUMINUM FORMING"

Technical Handbook

Write Today! Free when requested on business letterhead

Everyone who works with aluminum should have this new 148 page handbook, the latest addition to the Reynolds Technical Library. "Aluminum Forming" was published so that design engineers and plant supervisors could have, in a single volume, complete information on the proper techniques for working aluminum. Design and fabricating practices with aluminum are not always like those for other metals. So, in some cases modifications or even special procedures may be required. This handbook fully explains all these procedures and includes more than two hundred and thirty drawings and photographs, twenty-two tables and thirty-two formulas.



These are typical of the many illustrations in "Aluminum Forming": Left, drawn shell of 3S-O aluminum. Right, various stages of drawing necessary to produce shell. (Book includes formula for estimating number of draws.)

See "Mister Peepers" Sundays, on NBC-TV. Consult local listings for time and station.

For your free copy of the valuable Forming handbook plus a complete index of Reynolds technical literature, write on business letterhead (otherwise price of book is $1.00). Reynolds Metals Company, 2526 South Third Street, Louisville 1, Kentucky.

REYNOLDS ALUMINUM

MODERN DESIGN HAS ALUMINUM IN MIND

The Iron Age INTRODUCES

James P. Beyser, named vice-president - general manager, Buflovak Equipt. Div., BLAW-KNOX CO., Pittsburgh; and **Lambert J. Wischerath,** named a vice-president, same division. Mr. Beyser, succeeds Charles W. Pearson, who has retired.

Frans Wethly, appointed executive vice-president, Wilputte Coke Oven Div., ALLIED CHEMICAL DYE CORP., New York.

Robert M. Fuller, appointed assistant vice-president, STONE CONTAINER CORP., Chicago.

Raymond Szymanowitz, appointed executive vice-president, ACHESON INDUSTRIES, INC., New York.

Avery C. Adams, becomes chairman of the board, PITTSBURGH STEEL CO., Pittsburgh. He succeeds Joseph H. Carter, who has resigned due to ill health.

Isaac Harter, elected a director, VITRO CORP. OF AMERICA, New York.

H. R. Baxter, elected to the board of directors, NATIONAL CAN CORP.

Harold C. Osborne, appointed manager of industrial equipment sales,, Export Div., AMERICAN BRAKE SHOE CO., New York; and **Robert Beecken,** appointed manager of railway product sales.

H. M. Gage, appointed assistant to the director of purchases, Columbia-Geneva Steel Div., U. S. STEEL CORP., San Francisco.

Thomas H. Jeffers, has been appointed assistant general manager of the Anaheim Div., THE ROBERTSHAW-FULTON CONTROLS CO., Anaheim, Calif.

F. E. Pate, appointed operations manager, Gulf Div., ISTHMIAN STEAMSHIP CO., New York.

A. M. Lowrey, appointed assistant general sales manager, Western Division Branches, Quaker Rubber Corp., division of H. K. PORTER CO., INC., Pittsburgh.

Howard S. Gier, appointed manager—Thomas Strip Division Sales, PITTSBURGH STEEL CO.

Herbert Hildebrand, appointed sales manager, Materials Handling Equip. Div., UNION STEEL PRODUCTS CO., Albion, Mich.

Gordon L. Walker, appointed manager of industrial relations, Lincoln-Mercury Div., FORD MOTOR CO., Detroit.

H. E. Elliott, appointed sales manager, THE WATSON-STILLMAN CO., division of H. K. Porter Co., Inc., Roselle, N. J.

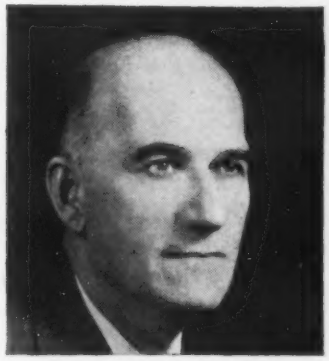
Lyle F. Gulley, appointed works ager, GRANITE CITY STEEL CO., Granite City, Ill.

William A. Dolan, becomes plant contract administrator, TEMCO AIRCRAFT CORP., Greenville, Tex., plant.

Jack Palmer, appointed works manager in charge of production and engineering, S. U. S. DIE CASTING CO., INC., Logansport, Ind.

Thomas R. Hazel, appointed supervisor, Tractor Equipt. Engineering Div., HYSTER CO., Portland; and **Ronald A. Johnson,** appointed supervisor, Engineering Standards Div.

Harry S. Komer, appointed superintendent, Materials Dept's plant in Anaheim, Calif., GENERAL ELECTRIC CO.



W. D. SULLIVAN, appointed vice-president, The Babcock & Wilcox Co., Mfg. Dept., Boiler Div.

CHARLES D. MICHAELSON, elected vice-president, Brader Copper Co., subsidiary of Kennecott Copper Corp.

STEWART S. CORT, becomes vice-president in charge of sales, Bethlehem Pacific Coast Steel Corp.

Personnel

Lambert A. Salender, named superintendent, newly formed strip pickling and cold reduction Dept., ARMCO STEEL CORP.; **John D. Patterson,** becomes superintendent; and **Hillard E. Miller,** appointed superintendent, West processing Dept.

Charles G. Strowe, appointed sales engineer, BLAW-KNOX CO., Chemical Plants Div., Pittsburgh.

Merlyn G. Woodle, appointed superintendent, REPUBLIC STEEL CORP., Minnesota ore mines.

J. P. Craven, named superintendent, Erection Dept., THE BABCOCK & WILCOX CO., Boiler Div., New York.

Boyette Edwards, Jr., has been named supervisor of industrial engineering, Phenolid Products Plant, GENERAL ELECTRIC, Chemical Materials Dept.

M. K. Peck, appointed assistant sales manager, THE BULLARD CO., Bridgeport, Conn.

Fred W. Manley, appointed to the staff of the International Div., MINNESOTA MINING & MFG. CO., St. Paul, Minn.

David J. Phelan, appointed x-ray product manager, Photo Products Dept., E. I. du Pont de NEMOURS AND CO., INC.

George W. Alexander, appointed assistant to the Operations manager, Engineering Works Div., DRAVO CORP., Pittsburgh.

Edwin Burke, appointed project engineer, Midland Works, CRUCIBLE STEEL CO. OF AMERICA.

Eugene L. Combs, promoted to supervisor of chromic acid sales, DIAMOND ALKALI CO.

Harry W. Burke, appointed field service engineer, Service Dept., CORY CORP.

Earl Clark, appointed a Detroit area sales representative, COLONIAL BROACH CO., Detroit.

J. J. KRAUS, elected vice-president of sales, Sharon Steel Corp.

A. C. LUNDGREN, elected vice-president The Thew Shovel Co., Lorain, Ohio.

ROBERT C. TALBOTT, named manager—Raw Materials Development, Columbia-Geneva Steel Div., U. S. Steel Corp.

JOHN S. RANDALL, appointed manager, Automotive Div., A. O. Smith Corp., Milwaukee.

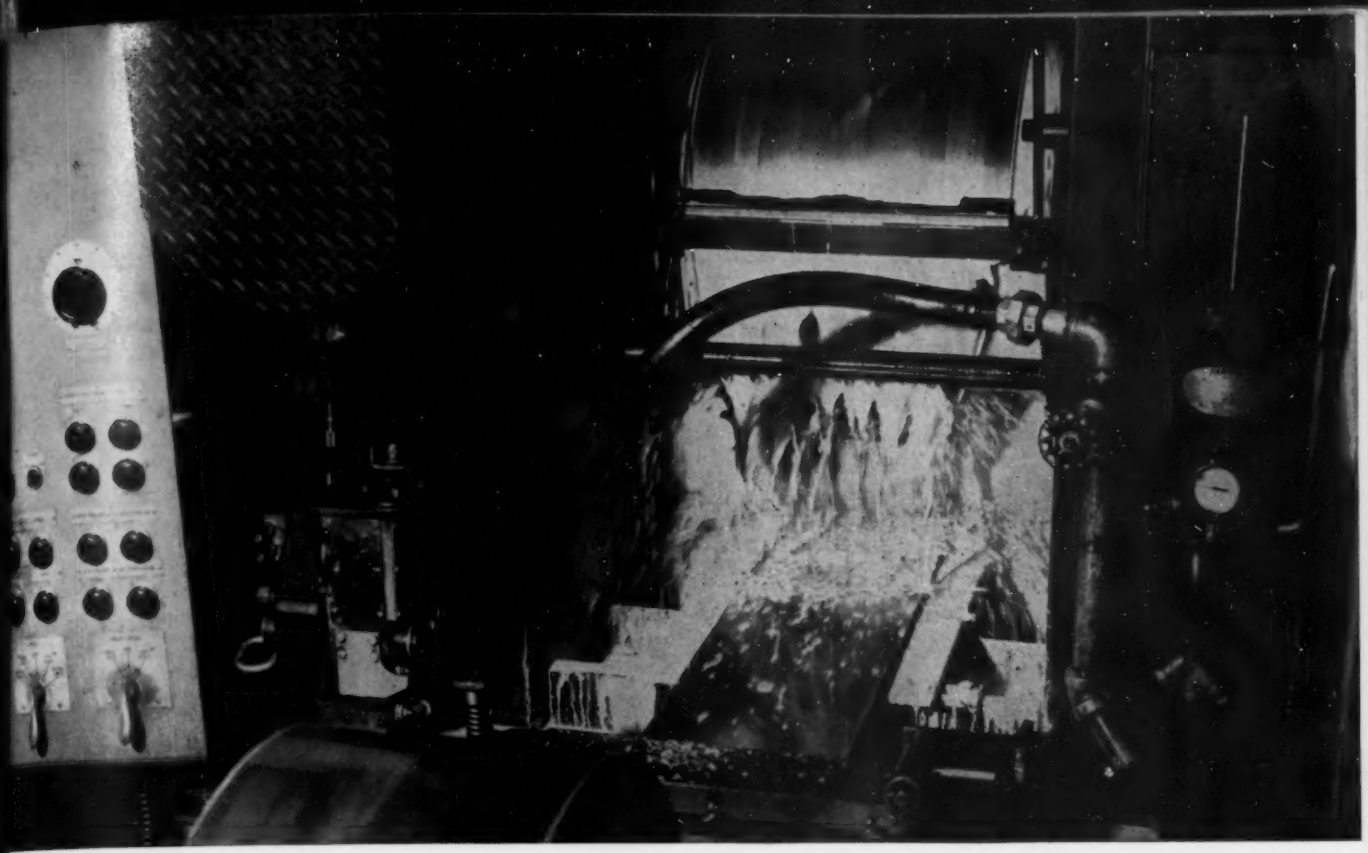
a SQUARE

This close-up of Hendrick Perforated Metal Plate shows no ordinary screen. No other screening medium can equal it for uniformity of mesh, for non-binding clearance and for unparalleled long service life.

beyond compare!

Flat or corrugated Hendrick Perforated Metal is available in any desired shape and size of perforations in high carbon steel and other commercially rolled metals. Decks can be changed fast and efficiently—cutting time and labor costs. For more details write for information.

Hendrick
MANUFACTURING COMPANY
37 DUNDAFF ST., CARBONDALE, PA. • *Sales Offices in Principal Cities*
Perforated Metal • Perforated Metal Screens • Wedge-Slot Screens • Architectural Grilles • Mitco Open Steel Flooring • Shur-Site Treads • Armorgrids



NEW SUNOCO EMULSIFYING ROLLING OIL EASIER TO USE, LASTS LONGER

It mixes readily in hard or cold water—forms whiter and more stable emulsions that can be used for a longer time. The lower viscosity of new Sunoco Emulsifying Rolling Oil makes it easier to pump from storage tanks. These improvements are the result of improved refining techniques made possible by several new multimillion-dollar refining units.

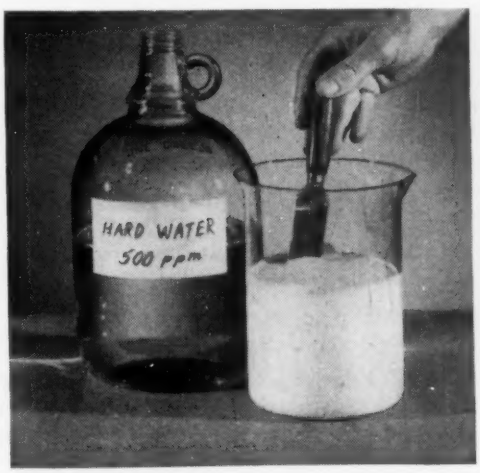
Users report cleaner rolls, reduced spalling, and absence of gumming. The result is lower power consumption and higher mill speeds—as much as 50% in many cases. In the annealing operations, Sunoco Emulsifying Rolling Oil burns off cleanly—usually making cleaning unnecessary. All of these advantages contribute to lower cost operation.

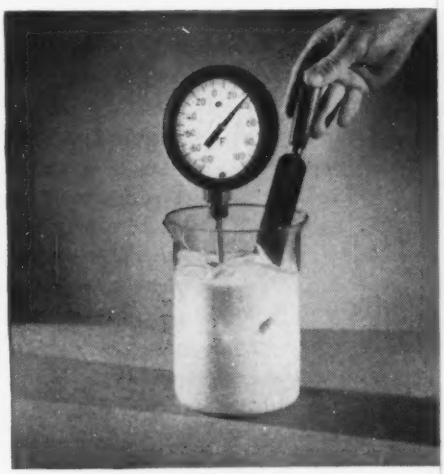
You can also use Sunoco Emulsifying Rolling Oil advantageously for rust proofing hot rolled sheets after pickling, and as a die lubricant in cold drawing steel bars.

The full story about this new oil is well worth your listening. Care to hear it? Just contact your Sun Oil Company representative. Or write Dept. IA-2.

TESTS SHOW HOW READILY THIS NEW OIL FORMS STABLE EMULSIONS

HARD WATER—Tested in dozens of samples of water obtained from industrial plants having hard water problems. Never failed to form a stable emulsion.





COLD WATER—Forms a stable emulsion in the coldest water . . . even ice water.

INDUSTRIAL PRODUCTS DEPARTMENT
SUN OIL COMPANY

SUNOCO®

PHILADELPHIA 3, PA. • SUN OIL COMPANY LTD., TORONTO & MONTREAL

Made by the refiners of famous Blue Sunoco Gasoline and Dynalube Motor Oils

"There's more to this than meets the A.I.S.I."

Micro Rold STAINLESS SAVES YOU MONEY BECAUSE OF *Micro Rold's* SUPER-ACCURACY—AND WE CAN PROVE IT!

You purchase stainless sheets on a weight basis. You order by gauge number, with permissible A.I.S.I. thickness variation plus or minus 10%. A standard 18 gauge 36"x120" sheet, with theoretical weight of 63.00 pounds, could permissibly vary between 59.22 and 65.52 pounds—and if you order 18 gauge, needing about .0475" thickness, you may receive sheets .052" thick. But MICRO-ROLD STAINLESS GIVES YOU MUCH BETTER CONTROL OVER THIS FEATURE FACTOR . . . MicroRold may be kept within a 3% tolerance.

MicroRold Stainless Sheets may be ordered by gauge number, and you may specify that they be rolled on the "light side" of the gauge range. Special equipment at Washington Steel makes possible more accurate control of thickness—and you save money.

Ask your steel warehouse distributor for details on MicroRold Stainless. It may mean the difference between profit and loss on your next job!

Washington Steel CORPORATION

WASHINGTON, PENNSYLVANIA

—Personnel—

Continued

John M. Davidson, appointed assistant sales manager, Metal Processing Dept., PENNSYLVANIA SALT MFG. CO., Philadelphia.

Ernest W. Rothaar, appointed to the staff CHRYSLER CORP., Detroit. He will be responsible for automotive body cost and design analysis and body plant automation.

J. R. Clemens, appointed major appliance advertising manager, Appliance Div., WESTINGHOUSE ELECTRIC CORP., Pittsburgh.

E. Clair Book, becomes purchasing agent, LUKENS STEEL CO., succeeding Hugh Kenworthy, who will retire June 30.

Warren Eisenberg, appointed sales representative, St. Louis district, KENNAMETAL INC.; and **Raymond Guenther,** appointed sales representative, Southern district, and **Robert Welch,** becomes sales representative, New England District.

Raymond F. Sutherland, appointed assistant district sales manager, PITTSBURGH STEEL CO., Pittsburgh.

Ralph H. Garlick, appointed superintendent, Cleveland, REPUBLIC STEEL CORP.

OBITUARIES

Dr. Karl B. McEachron, 64, internationally known scientist for his pioneering work on man-made lightning and high voltage phenomena, General Electric Co., recently in Pittsfield, Mass.

Thomas T. Royston, 67, vice-president and treasurer, Royston Laboratories, Inc., Blawnox, Pa., suddenly while on a business trip.

Stirling M. Rust, 72, chairman and founder of The Rust Engineering Co., recently at Homestead (Pa.) Hospital after a short illness.

B. Wilson Bird, manager, Fabricating Div., Atlantic Steel Co., Atlanta, at his home recently.

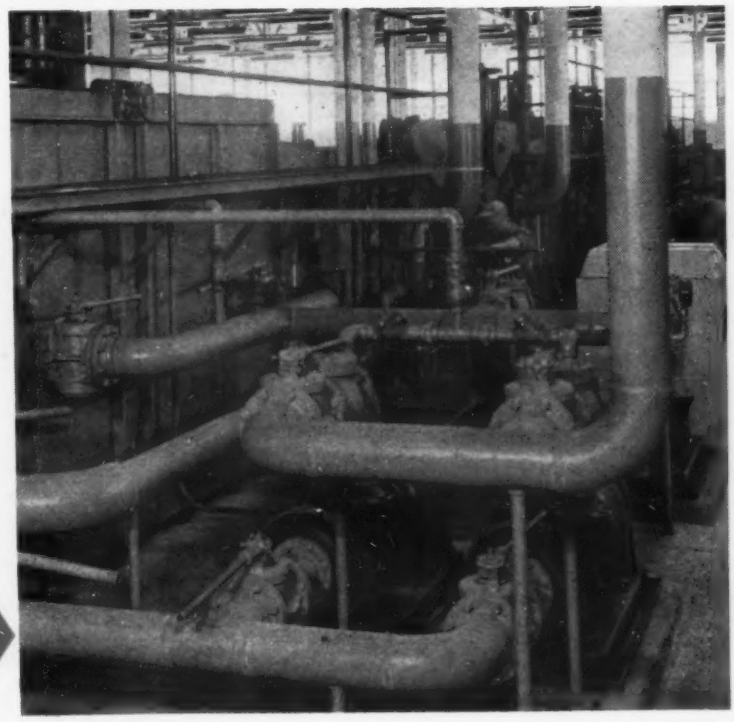
. . . CENTRAL COOLANT SYSTEM Offers Savings Benefits

By E. C. Beaudet
Technical Editor

- Cost-cutting benefits of a central coolant supply system are paying dividends at Chrysler Corp.'s new automatic transmission plant . . . Almost 100 pct recovery of water soluble oil is achieved.
- Added to lower coolant costs are savings in wheel life and better surface finish on Powerflite parts . . . Coolant is now supplied to about 150 production grinders but more machines may be added.
- No production time or labor is lost in having to clean individual machines and replace coolant . . . Flexible return system combines underground trenches and overhead lines . . . Steel liners in trenches provide faster coolant flow, eliminate seepage.

◆ LOWER COOLANT COSTS, better surface finishes and longer wheel life are among the many advantages achieved by Chrysler Corp. through the installation of a central coolant supply system. At the company's Powerflite transmission plant in Indianapolis, the system has been applied to all production grinders working on steel parts—about 150 machines. Plans call for its eventual extension to all machine tools in the plant using water-soluble oil for grinding and cutting operations on cast iron, malleable iron and steel.

Outstanding features of the setup include: A flexible return system which combines overhead and underground lines; Use of steel liners in trenches; Fixed orifices at each machine to con-



FILTRATION UNITS at the Chrysler plant permit almost complete recovery of water-soluble oil. Sump arrangement, foreground, is connected to tank located below the floor.

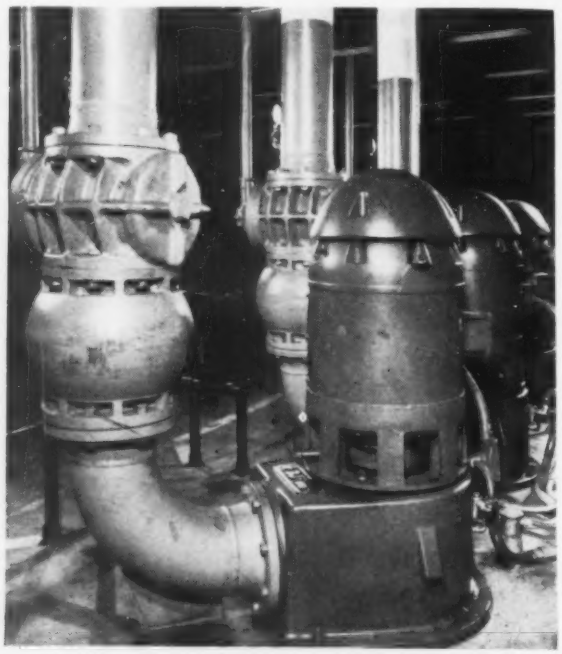
To prevent sludge from clogging underground system, trenches were designed with the proper slope . . . Flushing lines are also used.

trol coolant flow; Universal use of plug cocks to replace gate valves.

While no before and after savings comparisons are possible since the system was built into the new Powerflite transmission plant, Chrysler can point to many cost cutting benefits which are more than paying for its installation.

At the top of the list is the almost complete recovery over 99 pct—of the soluble oils used. Added to this is the elimination of the problem of disposing of dirty soluble oils. This is of growing concern in many areas because regulations require treating dirty oil before dumping.

The central supply system assures cool and clean coolant on the wheel at all times. It makes for longer wheel life since less wheel grinding is necessary and provides for consistently better surface finishes. A universal coolant which is clean and cool effects purchasing economies since many times different coolants are specified for certain jobs to overcome these defects.



PLUG COCKS, left, are cheaper in first cost, easier to maintain and take up less space.

Another big advantage is that by regulating the mixture at the tank the emulsion is kept from breaking down. There is no danger of dermatitis to the machine operator or machine contamination from dirty coolant.

No production down time or labor is lost in having to clean individual machines and replace the coolant, with a central supply system. Maintenance is easier because the cleaning tanks are confined to one relatively small space. Since the cleaning unit is located out of the production area valuable floor space is conserved for production operations.

Soluble oil is stored in a central tank farm located below ground outside the plant area. Water is supplied through normal city service. Soluble oil and water are pumped to automatic proportioning equipment which maintains an exact water and soluble oil mixture at all times. The oil-water ratio can be adjusted to any required mixture. Proportioning equipment consists of a predetermined metering device and a homogenizing unit which guarantees a complete mixture of the emulsion.

From the proportioning equipment water soluble oil is delivered to three flotation tanks of 7 thousand gal capacity each and then pumped through overhead supply lines. Flow rate from each tank is 1000 gpm or 3000 gpm throughout the distribution system.

Coolant is carried by overhead main and feeder lines to the production areas. Each machine has an individual drop and a fixed orifice which regulates the flow rate which varies for different machines. The flow rate can be ad-

FINISH GRINDING of Powerflite transmission parts is done in this 150-machine department.

justed up to a fixed amount by means of a diamond port plug cock.

In traveling through the machine, the water soluble oil by-passes the machine sump and feeds directly into an underground return system. No coolant or sludge can be stored in a machine since the sump is filled in with core sand covered by a thin layer of mortar. This method of filling in the sump permits realtering the machine to its former condition with little difficulty.

Liner permits smoother flow

The underground return system consists of feeder pipelines traveling along each row of machines to a 240-ft main trench. A steel liner wear plate formed to the proper hydraulic radius covers the bottom of the concrete trench. The steel liner permits smoother flow and prevents loss of coolant through seepage. The 18 feeder trenches in the Chrysler plant average 100 ft in length.

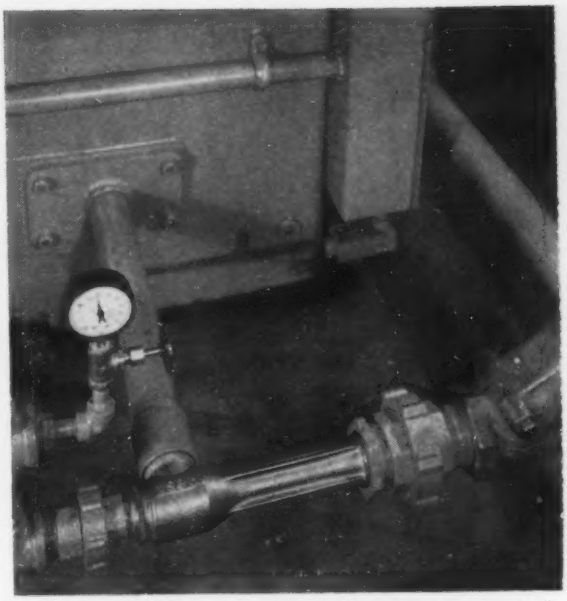
To prevent sludge from settling and clogging the lines the underground trench and feeder lines had to be designed with the right amount of slope to obtain sufficient velocity. The degree of slope varies with the distance of the line, quantity of coolant carried and the hydraulic radius of the trench. In feeder return lines $\frac{3}{8}$ in. per ft was used while in the main trench only $\frac{1}{4}$ in. per ft slope is necessary.

Although the underground return system serves most machines in the production grinding department, it was not feasible to extend it to cover all production machines in the plant. However, machines in other production departments are easily tied into the main system by means of overhead lines and ejector units attached to each machine. These ejector units increase the coolant flow rate from each machine to permit its return by overhead lines. They are also used on those machines whose design is such that it is not possible to pass the coolant through a filled-in machine sump. Funnel types arrangements on some machines direct the coolant into the ejector. Ejectors are used on about 30 machines.

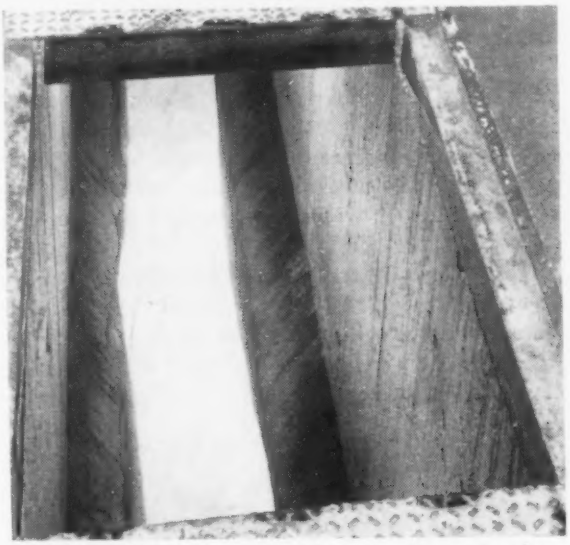
Flushing line prevents clogging

Dirty coolant from machines not tied into the underground system is carried overhead to isolated sumps spotted around the plant to serve different production areas. From these isolated sumps the coolant is pumped to the beginning of the main underground trench. With this type of arrangement greater flexibility is attained since units can be added to the system whenever desirable.

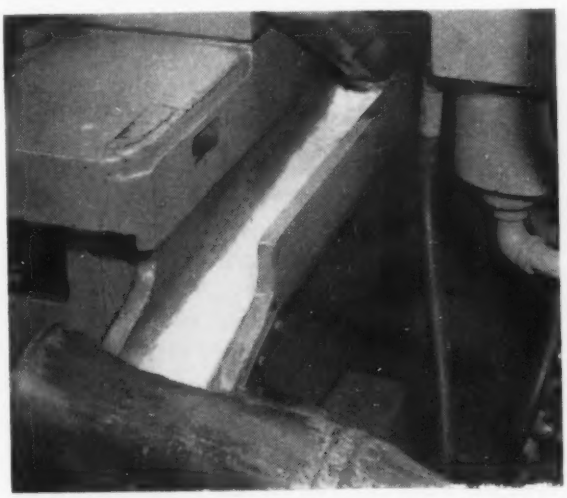
A further precaution against clogging the lines is a pressure flushing line connected to the end of each underground trench. In blowing down the lines, which Chrysler has not yet found necessary, coolant from feeder supply lines bypass the machines and flow directly into



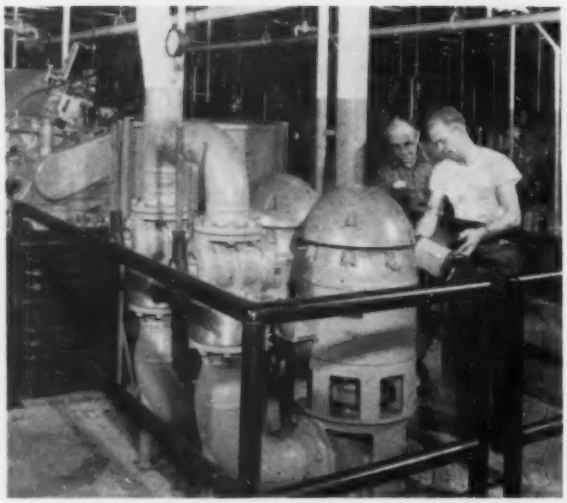
EJECTOR UNIT, used on machines not connected to underground system, increases the flow rate.



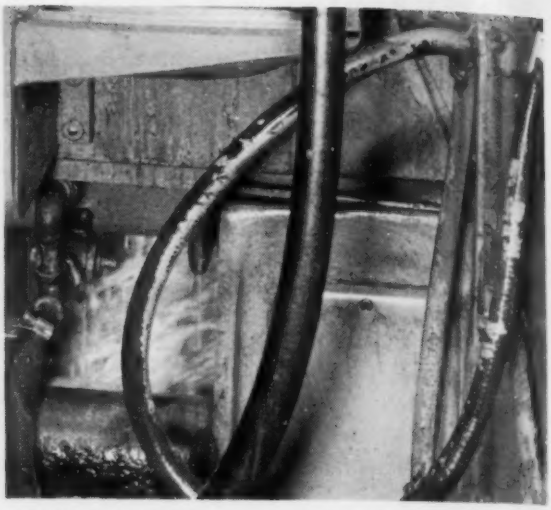
HIGH RATE of coolant flow is shown in this photo of main trench which has steel lining.



FUNNEL-TYPE arrangement is tied in with ejector unit to return coolant.



ISOLATED SUMP, below pumps, in ejector system gathers coolant from production areas.



CEMENTED-BASE type arrangement permits coolant to bypass machine pump.

the flushing line. Flushing lines are also used to maintain velocity in the system when an insufficient number of machines are operating.

Since pressure in the lines will vary with departmental demand, constant pressure in the main supply lines is maintained by the pressure regulators connected between the supply and return systems. Pressure in the main lines is held at 50 psi to permit ejectors to operate efficiently.

From the main trench used coolant returns to an underground sump, so designed that a minimum of sludge will settle out. At the bottom of the sump 3 pumps (one a standby) of 1500 gpm capacity, transfer used coolant to dirty oil distribution header lines. Volume in the sump varies from 1 to 2000 gal. From the dirty header lines used oil is distributed to 3 U. S. Hoffman flotation units where it is cleaned and returned to the system.

Less maintenance with plug cocks

Dirty coolant first flows into the dirty storage tank section of a unit where the larger sludge particle settle out and are removed by conveyor. After remaining in the 6000 gal storage tank for about 6 min it is transferred by 500 gpm pumps to two flotation cells. In the flotation cells, a motor-driven rotor assembly aerates the coolant causing sludge to float to the surface where it is skimmed off by paddle-type wheels. The clean coolant is then returned to the system.

Universal use of plug cocks instead of gate valves throughout the system has several advantages, according to Chrysler engineers. They are cheaper in first cost, take up less space, are easier to maintain and stand up better under dirty oil conditions.

A sludge scraper mechanism contained in the filtration unit consists of a series of scraper flights mounted on a drag chain conveyor and driven by a motor at slow speed. The slow speed

MIXING UNIT at filtration tank guarantees complete mixture of water and soluble oil.

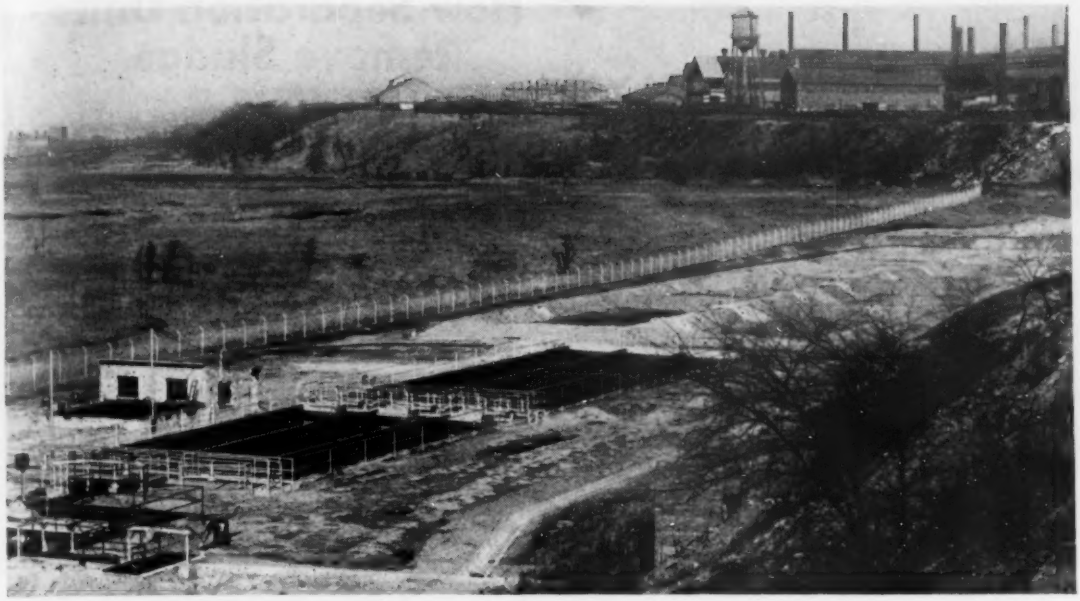
of the scraper flights permits drainage of excess coolant from the sludge before discharge.

Automatic operation of the filtration unit is a major factor in reducing maintenance costs. It eliminates the need for adding powders and the use of screens, papers or bags which become clogged and require cleaning or replacement.

Aside from the central coolant supply system there are many outstanding features in the new Chrysler automatic transmission plant.

The plant which started production late last year machines about 120 different parts for Powerflite transmissions. In laying out the plant a good deal of attention was paid to conveyorization. Overhead conveyors total over 3 miles in length while a series of gravity roller conveyors come to over 5200 ft. An underground chip disposal system simplifies chip handling.

Cleaner discharge—



SEPARATION SYSTEM of National Supply Co. cleans 5 million gal per day of waste water. Plant is 25 ft above river level and 75 ft below floor level of the main mill, and covers 2 acres.

Separation Plant

Removes Sludge from Waste Water

By J. E. Culleton
Chief Engineer
Spang-Chalfant Div.
National Supply Co.
Ambridge, Pa.

◆ To reduce industrial waste in the Ohio River, the Spang-Chalfant plant of National Supply Co. built a separation system capable of treating 10 million gal of waste water per day . . . Discharge water is now cleaner than the river water . . . System provides for 33 pct increase in capacity.

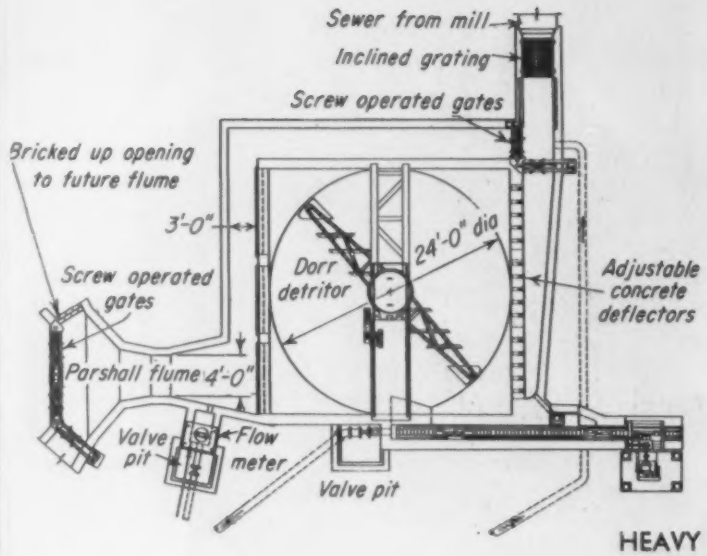
◆ Water treatment plant consists primarily of a Dorr Detritor for separating settled solids, and three primary and three secondary separator basins . . . It also includes a pump house with adjoining scum decanter, scrapers and skimmers . . . Residual water evaporates from collected sludge in eight earthwork lagoons.

◆ INDUSTRIAL WASTE WATER discharged into the Ohio River is cleaner than the river water itself. With a new waste-water separation system, the Spang-Chalfant plant of National Supply Co., Ambridge, Pa., cleans an average of 5 million gal per day of waste water which empties in the Ohio River about 20 miles downstream from Pittsburgh. The separation plant can treat 10 million gal per day, and has provisions for a 33 pct increase in capacity.

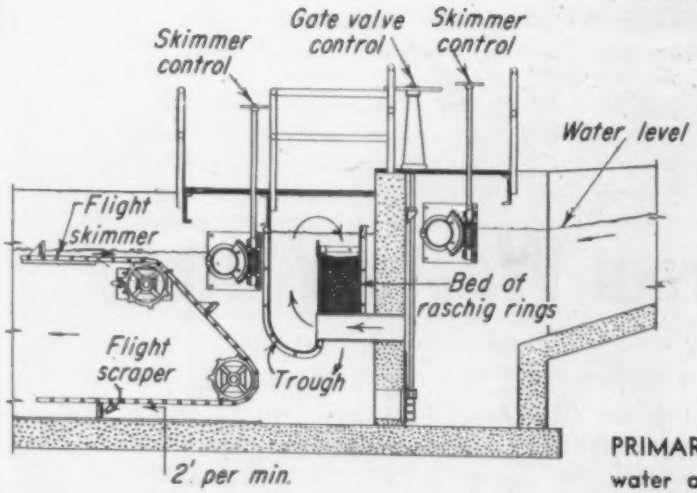
The waste water is largely from processes used in the manufacture of seamless tubing and oil-country tubular products. It contains mill scale, dirt, and sand, all combined with oil and grease. This waste water is almost odorless, contains comparatively little acid and no sewage, both of which are disposed by other means. Much of the time, the effluent is slightly on the alkaline side.

The new treating system complies with a new state law which requires all industries and municipalities to clean waste water and remove contaminants from sewage before discharge into rivers. Spang-Chalfant based its design on standard waste-water equipment developed by the American Petroleum Institute for oil refineries. Additional provisions were made for preliminary removal of a large volume of settled solid par-

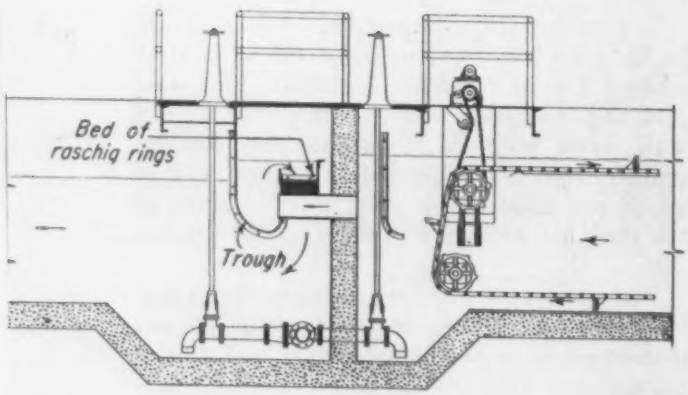
How Separation Units Remove Sludge



HEAVY PARTICLES in mill waste water settle in this Dorr Detritor where they are pushed outward by a rotary scraper. Reciprocating hoes continuously remove sludge from the basin.



PRIMARY SETTLING BASINS receive waste water and pass it through film rupture trays containing ceramic Raschig rings. Flight scrapers and skimmers collect floating oil and sludge.



ADJOINING ENDS of primary and secondary basins have sludge pockets from which sludge is removed by suction lines. Residual water is evaporated in earthwork basins.

ticles and sludge, most of which is a combination of fine solids with oil and grease.

The waste water system occupies nearly 2 acres of ground, 800 ft long parallel with the river, and 100 ft wide. It is about 25 ft above normal river level and 75 ft below the main mill floor level. More than half of this area is occupied by eight earthwork basins or lagoons, each 100 ft long and 40 ft wide. Sludge and oil are delivered to them from any of six separator basins and a scum pit by either of two parallel-connected motor-driven pumps. Entrained water is removed from the sludge in these basins by evaporation and runoff.

System works progressively

More active parts of the separation system clean the water in several progressive steps. Basins and channels, which required 1500 cu yd of reinforced concrete, were built for this purpose. The first separation is by a simple grating which keeps comparatively large solids out of the system.

Next is a 24-ft square Dorr Detritor, which is a settling basin, having a depth of 4 ft and normal water depth of 2½ ft. A rotary scraper turning in it at ¼ rpm carries settled material outward to the two ends into scoops which push this material into a submerged trough. Mechanized hoes continuously pull it out and up an inclined trough out of which it drops onto the ground where it can be removed.

To prevent turbulence in the Detritor, water from the 36-in. diam mill sewer makes a 90° turn into the Detritor guided by 15 adjustable concrete deflectors in a 21-ft opening that is a little more than 2 ft high. To provide for maintenance of the Detritor, a 3-ft wide channel around it connects with the out-flow channel. These channels are of the same depth as the Detritor. Two screw-operated gates at the entrance corner control the flow through or around the unit.

Before overflow water from the Detritor reaches the separator basins, it passes through a parshall flume which permits an accurate measure of the rate of water flow. A Builders-Providence recording flowmeter with circular chart shows flow rates in gallons per day. Each chart records for an entire week. The instrument is protected from freezing by an electric heater.

Water enters across the ends of the primary separators by way of 14-ft distribution boxes, through nine 10-in. diam pipes into the bottom of each box. Water in these boxes overflows down into the main settling basins through 14-ft film rupture trays containing beds of 2-in. diam ceramic Raschig rings. These beds help to separate and break up contaminating material which does not separate readily from the water by gravity. The boxes and Raschig ring beds also prevent turbulence by uniformly distributing flow across the ends of the separators.

Surface oil which accumulates in the flumes at the entrances of the primary separators is removed occasionally through a horizontally slotted 12-in. diam drain pipe which is partially above water level. An attendant adjusts the drain pipe level with a hand wheel until the oil flows through the longitudinal slots. This oil flows by gravity into a square concrete pit or scum decanter which adjoins the pump house.

Further settling of solids and floatation of oil occurs in the primary separator where full-width scrapers spaced about 5 ft apart push settled material in the direction of water flow at a speed of 2 ft per min. The sludge moves into pockets at the far end where it can be pumped out. Scraper blades become skimmers as the two chains to which they are attached carry them to the surface of the water and move them in the opposite direction. Surface oil accumulates beside the distribution box where it is drained off occasionally through slotted drain pipes.

From the primary separators the water flows into adjoining ends of secondary separator basins by way of distribution boxes containing shallow beds of Raschig rings. The distribution box is at a lower level than in the primary separator. Secondary separators are of the same widths as the primary but are 127 ft long and have no scrapers or skimmers except slotted, rotatable drain pipes at the far end.

Water flows by gravity from the lower end through a sump into a 36-in. concrete sewer to the river. The sump also receives surface water from a 3-ft wide concrete trench on the upper side of the water-treating system. This trench is 30 to 50 ft from the separator plant.

All sludge collected at the adjoining ends of the primary and secondary separator basins is pumped into any of eight lagoons. The pumps can also deliver sludge from the scum pit beside the pump house to the lagoons. When sludge content of the water is low, it can be delivered to the Detritor from either the separator pockets or the scum pit.

The two pumps are 4-in. Marlow sludge pumps of duplex type connected in parallel to 6-in. suction and discharge lines. Normal capacity is 6300 gal per hr but is variable to a maximum of 8400 gal per hr. They have 9-in. diam plungers that operate with a stroke that can be varied from 3.86 to 6.56 in.

Special precautions were taken in constructing the scum pit to prevent it from being buoyed up by flood waters. The pit measures 19 by 21½ ft, and is 14 ft deep. Concrete walls of this pit are 2 ft thick at the bottom and taper up to 1½ ft in thickness. The concrete base is 3 ft thick. Total weight of the empty pit is about 20 pct more than its water displacement.

The amount of contaminating material removed in any given period of time has not yet been determined. However, during 51 months of partial operation, tons of material have accumulated in the scum pit, and more tons discharged by the Detritor have been hauled away.

Rolled threads help—

PLATED LOCKNUTS Reduce Galling In Titanium Bolts

◆ Tests to determine relaxation and galling characteristics of titanium bolts show that best bolt service is obtained by using silver-plated locknuts in combination with rolled threads on bolts . . . At equal torque loads, tensile loads are much higher for bolts using silver-plated nuts than for those using rhodium-plated nuts.

◆ Mechanical wear is also less with silver-plated nuts . . . Friction is greater between titanium bolts and rhodium-plated nuts but the galling tendency is less than between titanium bolts and silver-plated nuts . . . Relaxation at normal operating loads was negligible, but at high stress, it was appreciable.

By R. A. Baughman
Aircraft Gas Turbine Div.
General Electric Co.
Evendale, Ohio

◆ TITANIUM BOLTS for aircraft gas turbines have the important advantage of saving weight. But, their high degree of relaxation and the ease with which these bolts seize and gall other materials has made considerable further study of such applications necessary where titanium bolts were to be used. To determine whether these problems would prevent satisfactory service life, the Aircraft Gas Turbine Div., General Electric Co., Evendale, Ohio, conducted tests under a number of conditions.

Tests were performed on 7/16-in. diam RC-130B titanium bolts, with both rolled and ground threads. In addition to relaxation and galling tests, the investigation included tensile, torque and stress rupture tests. All bolts had 20 threads per in. Some bolts were hot-roll threaded, annealed and sandblasted. Others were cold-threaded and given an immediate stress-relief anneal. Austenitic stainless steel locknuts, both silver plated and rhodium plated, were also used in the tests.

Tensile tests on cold-roll threaded, ground threaded and hot-roll threaded bolts made at both room tempeature and 500°F show that the strength is comparable to that of the original material. Results of these tests are given in Table I. The data also show that rolled threads are slightly superior to ground threads at both temperatures.

Torque v. tensile load of the bolt was measured by assembling the bolt in a tensile machine, tightening the nut and reading the tensile load. These tests were made using the three types of bolts, and both types of nuts.

TABLE II **TORQUE V. TENSILE LOAD**

Type Thread	Cold Rolled				Cold Ground				Hot Rolled			
Nut Plating	Silver		Rhodium		Silver		Rhodium		Silver		Rhodium	
Lubricant	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Torque, in-lb	Tensile Load, lb											
30	80	250	145	195	245	310	150	165	270	300	220	180
60	315	615	295	405	435	685	325	390	570	615	305	285
90	640	1090	415	685	725	1010	465	630	860	1010	530	500
120	750	1510	665	985	925	1525	650	830	1150	1335	700	740
150	1095	1890	740	1210	1110	1975	795	1080	1380	1715	780	960
180	1665	2440	980	1525	1495	2440	1010	1330	1750	2116	835	1220
210	1875	2915	1170	1910	1790	2830	1125	1530	2050	2510	1055	1480
240	2100	3260	1305	2140	2010	3305	1265	1750	2300	2840	1195	1710
270	2370	3710	1520	2365	2270	3825	1400	1940	2470	3195	1325	1950
300	2660	4300	1735	2680	2510	4265	1585	2140	2710	3560	1500	2150
330	2890	4600	1830	2835	2805	4630	1705	2335	3050	3990	1580	2325
360	3110	4950	2110	3160	3060	5170	1845	2600	3310	4355	1735	2505
390	3380	5280	2240	3395	3300	5585	1985	2825	3640	4850	1690	2705
420	3910	5600	2490	3590	3585	5970	2160	2915	3980	5160	2060	2935
450	4120	....	2585	3800	3780	....	2270	3135	4230	5630	2210	3045
480	4310	....	2750	4135	3980	....	2380	3225	4600	6035	2410	3120

Also, tests were made with and without lubricant. Table II lists rsults of these tests. For equal torque loads, the tensile load is much higher with the silver-plated nuts than it is with rhodium-plated nuts. This indicates that much greater friction exists between the titanium bolts and the rhodium-plated nuts.

Where torque values were equal, tensile loads increased when lubricant was added.

Galling tests were made by cyclically loading, heating and unloading the bolt with locknuts. The three types of bolts and both types of nuts were used for these tests. Results show, in almost every case, that greater tendency for galling exists between the bolts and silver-plated nuts than between the bolts and rhodium-plated nutt, although the tensile load data show that the opposite should be true. These tests also show that the galling tendency is greater on ground threads than on rolled.

Mechanical wear, noted by the reduction in bolt-thread diameter, shows that rhodium-plated nuts cause the greater wear. Although these results are not conclusive, this greater wear can be expected because of the higher friction with the rhodium-plated nuts.

Bolts showed very little metal pickup on the threads except in one case, that being a hot-roll threaded bolt with a silver-plated locknut. After several cycles during the test, locknuts seemed to yield slightly causing a loosening effect on the slotted and crimped part of the nut. This characteristic is taken on by the nut after several cycles of assembly and disassembly together with the heating. None of these effects were serious, and all bolts and nuts were considered satisfactory for use after this ten-cycle galling test.

Because of the higher friction of the rhodium-plated nuts, thread loading on these nuts was lower than for silver-plated nuts since the torque load applied was the same for both. This, plus the greater wear which occurred with the rhodium-plated nuts even at lower thread loading, makes it likely that excessive wear might be encountered with rhodium-plated nuts if loaded to a higher torque value.

TABLE I

TENSILE TEST RESULTS

Type Thread	Temperature, °F	Tensile Load, lb	Strength, psi*
Cold Rolled	70	17,080	156,700
Cold Ground	70	16,980	155,800
Hot Rolled	70	17,080	156,700
Cold Rolled	500	14,080	129,000
Cold Ground	500	13,180	120,900
Hot Rolled	500	14,180	129,900
Original Material	70	.....	150,000
Original Material	500	.....	126,000

* Based on thread root diameter of 0.3725 in.

Two groups of relaxation tests were made. All of these tests were at room temperature using silver-plated nuts. Results of the relaxation tests are shown in Table III.

Under relatively low stress, very little, if any, relaxation occurred in 150 hr. Bolts were loaded to various amounts of torque, and the lossening effect checked with time to obtain the measure of relaxation.

Relaxation at high stress was measured by loading bolts to near the yield points, holding them under load and periodically checking the rapidity with which the load decreased due to relaxation.

After intervals of time, the load was removed from the fixture and taken up on the tensile machine, then read diectly on the tensile scale. In these tests, relaxation occurs, but the test method used can only be considered accurate to within 10 or 15 pct.

Several stress rupture tests were made at 500°F. In each case, the bolts successfully withstood a 13,800-lb load for a 4-hr period.

TABLE III

RELAXATION TESTS ON TITANIUM BOLTS

Type Thread	Start		1 hr		4 hr		24 hr		150 hr	
	Torque, in-lb	Load, lb	Torque, in-lb	Load, lb	Torque, in-lb	Load, lb	Torque, in-lb	Load, lb	Torque, in-lb	Load, lb
Cold Rolled	240	2100	240	2100	240	2100	240	2100	240	2100
Cold Rolled	400	3600	400	3600	400	3600	400	3600	390	3500
Cold Ground	240	2000	240	2000	240	2000	240	2000	240	2000
Cold Ground	400	3370	400	3370	400	3370	390	3270	390	3270
Hot Rolled	240	2100	240	2100	220	2080	220	2080	220	2080
Hot Rolled	400	3800	390	3600	380	3600	380	3600	380	3600

Type Thread	Initial	3 hr	24 hr	98 hr
Cold Rolled	12,800	7800	....	4350
Cold Rolled	12,800	7200	5400	4180
Cold Rolled	10,650	9580	5200	....
Cold Rolled	12,800	7900	5700	4550
Hot Rolled	12,800	8200	5400	4500

In multiple tooling—

CUT TOOL COSTS, Simplify Design W

By Stanley Snorek
Tool Design Engineer
Western Electric Co., Inc.
Chicago

◆ Costs of making identical tools and fixtures for assembly operations has been substantially reduced at Western Electric through wider use of precision casting methods . . . In many cases toolroom machining requirements were reduced.

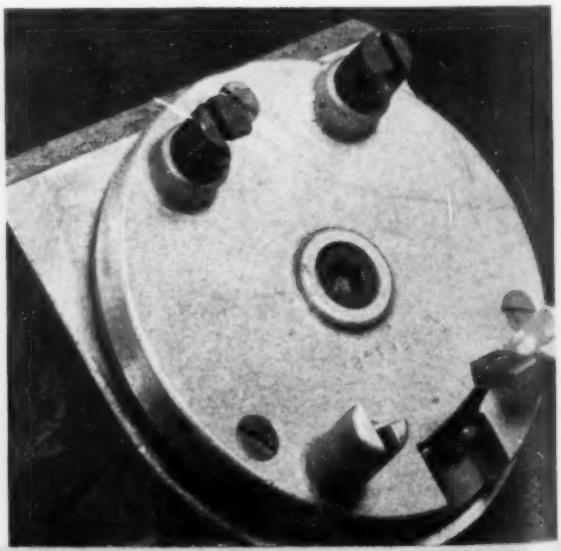
◆ Simplified tool design and fewer tool details were possible where precision casting was used . . . Surface finish is excellent . . . Where volume is high enough, cost of obtaining suitable molds is offset by reduction in machining requirements.

◆ USE OF PRECISION casting methods to produce large numbers of identical assembly tools has enabled Western Electric Co. to make substantial savings in tool costs and to simplify tool designs. Precision cast details have been used successfully in hundreds of assembly fixtures for conveyorized production of the company's newest telephone set.

In some cases a single precision cast detail was designed to perform a function which normally required several details when made by conventional tool construction methods. Also, it was possible to eliminate many machining operations because the precision casting process produced details with good surface finish and as-cast dimensional stability sufficiently accurate for most purposes.

Primary consideration in selecting tool details

FOUR MAIN PARTS of this cementing fixture were precision cast in oil hardening steel.



SOLDERING FIXTURE has base and rotating aluminum plate. Two steel studs are cast in plate.

With Precision Casting

to be precision cast is cost. In each case an analysis was made. Cost of the precision casting plus charges for any machining operations was compared with the cost of making the details by conventional toolroom machining methods.

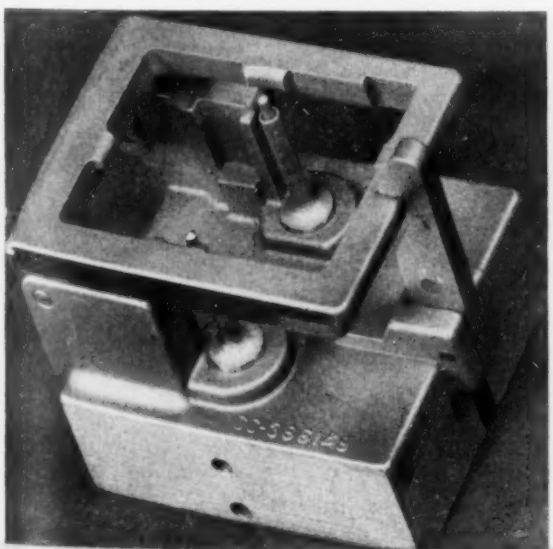
Because of pattern and mold costs, precision casting was the more expensive process of making small quantities of tool details. However, in quantities of 50 to 75 the additional charges for pattern and molds are offset by savings from elimination of some machining operations. For larger quantities, tool details made by precision casting cost less. Savings varied from 15 to 50 pct, depending on size and complexity of the tool parts involved.

Three different casting processes were used to make details for assembly fixtures. Aluminum bases and carriers were precision cast in plaster molds made from accurate metal patterns, and poured by conventional foundry methods. In most cases, a parting line was visible on the castings. Surface finish required was comparable to that produced by conventional toolroom milling and turning. Finish on the castings, as checked by a comparison with standard samples, was 125 rms, and satisfactory for the use intended. Dimensions varied about 0.003 in. per inch except across the parting line where the variation was 0.010 in.

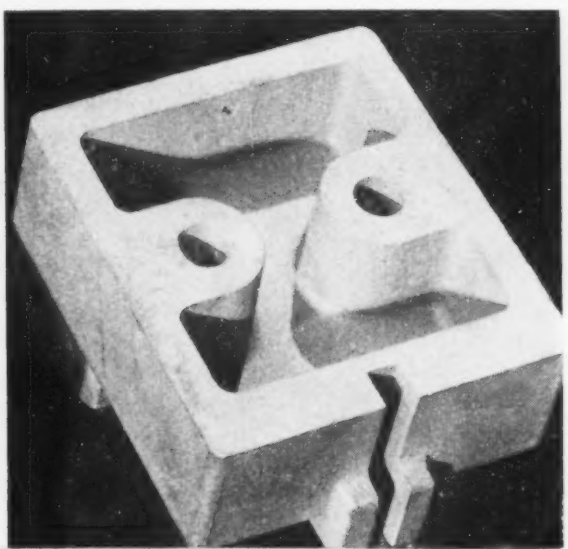
Small steel details were precision cast using an injection molded polystyrene pattern around which a silica investment was poured and fired. Firing melted out the pattern and the casting was poured centrifugally. This method produced dense accurate castings, with a surface finish of 32 to 50 rms. Dimensions varied as much as 0.008 in. per inch. Where extreme accuracy was required, a finishing allowance was made and the details were later ground to size.

Large steel details were precision cast using a wax pattern around which a silica investment was poured and fired. The pattern melting out during firing. These details were not pressure cast and castings contained some surface defects. Because of the larger size, dimensional variations were somewhat greater than in pressure cast details, and again sufficient allowances were made to permit grinding to final size.

First precision casting made was the 6½ in. long aluminum base of an assembly fixture. The fixture holds the telephone set receiver ferrule for a crimping operation. For most efficient operation of the crimping press and its conveyor, 275 fixtures were needed. Ten tryout fixtures



BASE, LATCH AND LEAF of this riveting and clinching fixture were precision cast in tool steel.



BASE of riveting fixture was cored to reduce overall weight, control shrinkage.

were made in advance to test the equipment. Bases of the tryout fixtures were cast in conventional sand-molds.

After the tool tryouts, all remaining bases were precision cast in plaster molds. The precision cast base had smooth surfaces and clean cut edges as compared to a sand cast base. A large hole at the rear of the precision casting was cored to size. In the sand casting it was cored undersize and subsequently machined. The small hole in the circular boss required only a reaming operation to bring it to size.

Three of six machining operations required on the sand casting were eliminated. In spite of a 160 pct higher casting cost, the completed precision cast bases cost 50 pct less than bases made from sand castings.

The fixture used to hold the ringer frame while several components are assembled to it consists of a base and hinged nest. The nest holds the ringer frame and is hinged to permit assembling parts to two different portions of the frame.

A few fixtures needed to tryout the assembly conveyor were made from sand cast aluminum bases and nests. Five machining operations were required on the base casting and three on the nest. These operations included machining the lugs on the base and the sides of the nest to secure satisfactory swiveling of the nest.

After minor design modifications to overcome difficulties encountered in tryout, 400 fixtures were made using aluminum bases and nests precision cast in plaster molds. The precision cast fixture had improved surface finish and well-defined surface. Three machining operations were eliminated on the base and two on the nest. The closer dimensional control possible with precision casting eliminated the machining of the base and nest necessary in sand cast parts to secure satisfactory swiveling of the nest.

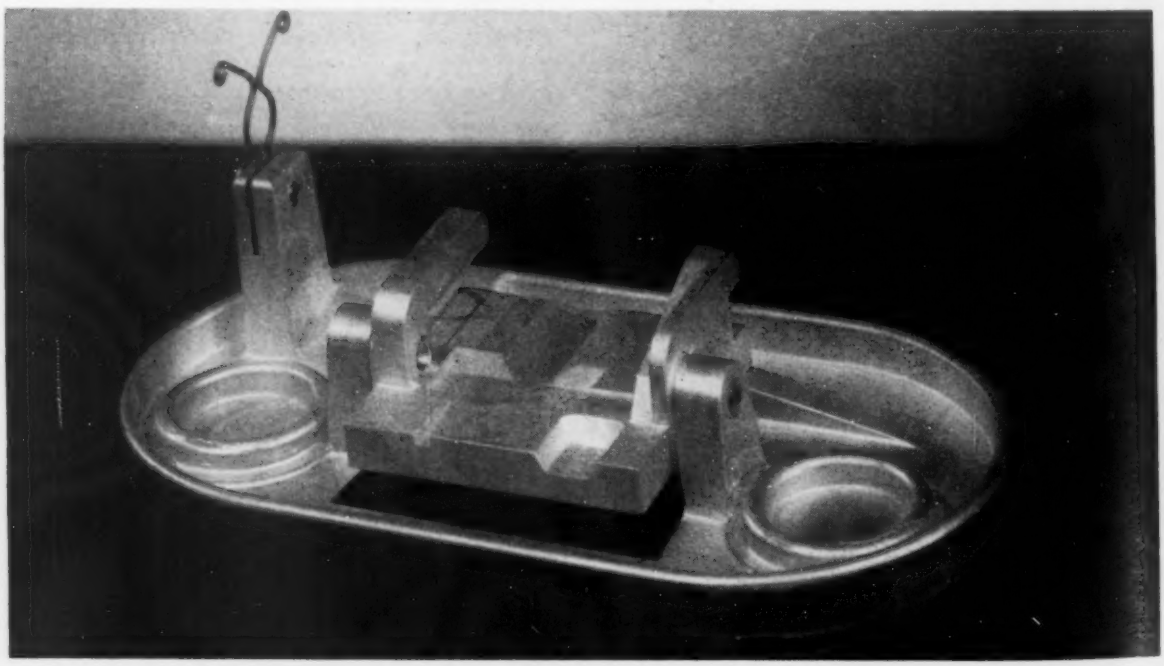
Only machining needed was the milling of the slot in the base for the ringer lead wire clip, drilling and tapping the wire clip retaining screw hole, and drilling and reaming of two hinge pin holes in both base and nest. Cost of the precision castings was five and one-half times that of sand castings. However, elimination of five machining operations by use of precision castings reduced the final cost of the fixtures by 27 pct.

A small spring actuated clamp was designed to hold the ringer coil and its upper and lower spool heads while cementing these parts together. The three parts are loaded over a plug with the circular spoolhead resting on a washer type part. A locking part is then pressed down over the upper spoolhead and the parts are clamped between it and the washer by pressure of the coil spring. A lug on the upper lock detail orients a flat side of the upper spoolhead.

Detail is sharp

The four details of the clamping device were precision cast of oil hardening tool steel using polystyrene patterns and centrifugal casting. The castings are clear-cut and sharp in detail. The only allowances for subsequent machining were on mating surfaces and holes where dimensional tolerances of 0.001 in. were necessary. With the exception of two holes drilled in the castings, all remaining machining was done by grinding after the castings were hardened. Cost of 450 precision cast clamps was 15 pct under the cost of machining them from bar stock.

Four hundred fifty fixtures were made to hold a network while leads are soldered to terminals. These small fixtures consist of a circular holder plate mounted on an angular base. A pivot screw



BASE AND NEST of assembly fixture precision cast in aluminum. Method reduced machining.

permits rotation of the holder to convenient soldering positions. Both base and holder were precision cast of aluminum using plaster molds. The upper face of the base was sufficiently flat for satisfactory mounting of the circular holder. Only machining necessary was the drilling and tapping of two holes.

The circular aluminum plate contains two steel studs. These were properly positioned in the plaster mold prior to casting the aluminum. Work holding surfaces of the two steel lugs and those of two integrally cast lugs are within 0.005 in. of their proper positions.

Casting the two steel studs into position eliminated drilling two holes and assembling and aligning the studs. A counterbored center hole for the pivot screw and two additional countersunk holes for the screws which fasten a wear plate to its bottom surface were cast into this detail. Only drilling and tapping of holes for two mounting screws used to fasten a spring detent to the holder were required. The steel studs are precision cast of steel and have grooved and flatted shanks to prevent them from pulling out and to insure proper positioning in the holder. The use of precision cast details reduced the cost of these fixtures by 30 pct.

A small precision cast fixture was developed to hold a plastic terminal plate and two transformers for riveting and clinching operations. The base contains two commercial riveting anvils. A hinged leaf locates the terminal plate and confines the components prior to riveting. A spring actuated latch locks the leaf. This fixture is an outstanding example of the simplicity of tooling that can be achieved by designing for the precision casting method. Base, leaf and latch were precision cast of oil hardening tool steel and subsequently hardened.

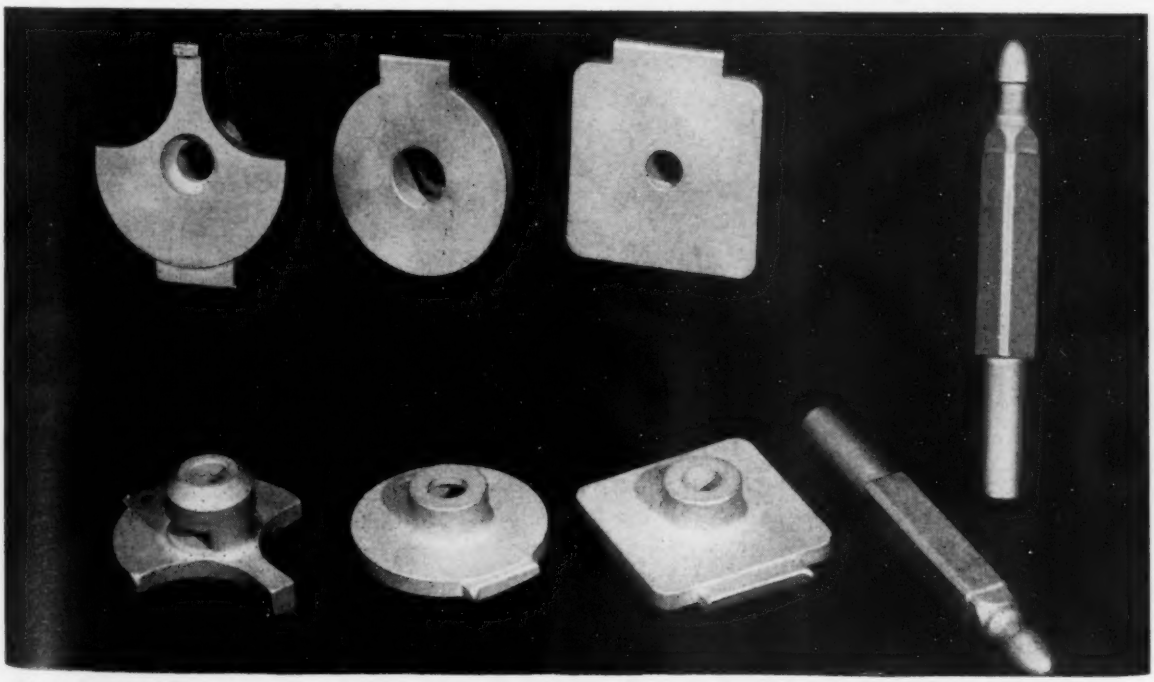
The base is 3 in. wide, 3 11/16 in. long and 2 13/32 in. high. To control shrinkage, mass was reduced by coring, resulting in more uniform and consistently accurate castings. Wax patterns were used and the base castings contain some surface imperfections which do not impair their use.

As received from the foundry the base has two holes for the anvils and a slot for the latch. Inner portion of the lugs which enclose the leaf were cast with allowances for machining. The bottom and four sides were ground after heat treating to permit accurate nesting of the fixture in the riveting machine.

Only minor machining needed

The two vertical lugs adjacent to the anvil holes are shaped to hold one transformer in position for clinching. The other transformer fits over the pilots of the riveting anvils and is supported on the small raised boss behind the latch slot. These surfaces were cast to within 0.005 in. of their required locations and dimensions. No machining was necessary to permit satisfactory positioning of the transformers. The integral design of the two vertical lugs and base is such that machining by conventional toolroom methods would be impractical. If this detail were not a casting the two lugs would have to be individual details fastened to the base with screws and dowels.

The leaf was also precision cast of oil hardening tool steel. A rectangular opening locates the terminal plate. Four projecting lugs hold the plate down when the leaf is locked in position. Only two machining operations were necessary. The hinge lugs were machined to fit into the base and the hinge pin holes were drilled and reamed.



POLYSTYRENE patterns, centrifugal castings, were used to make parts for cementing fixture parts.

For stress and strain—

DIECASTINGS: Industry Us

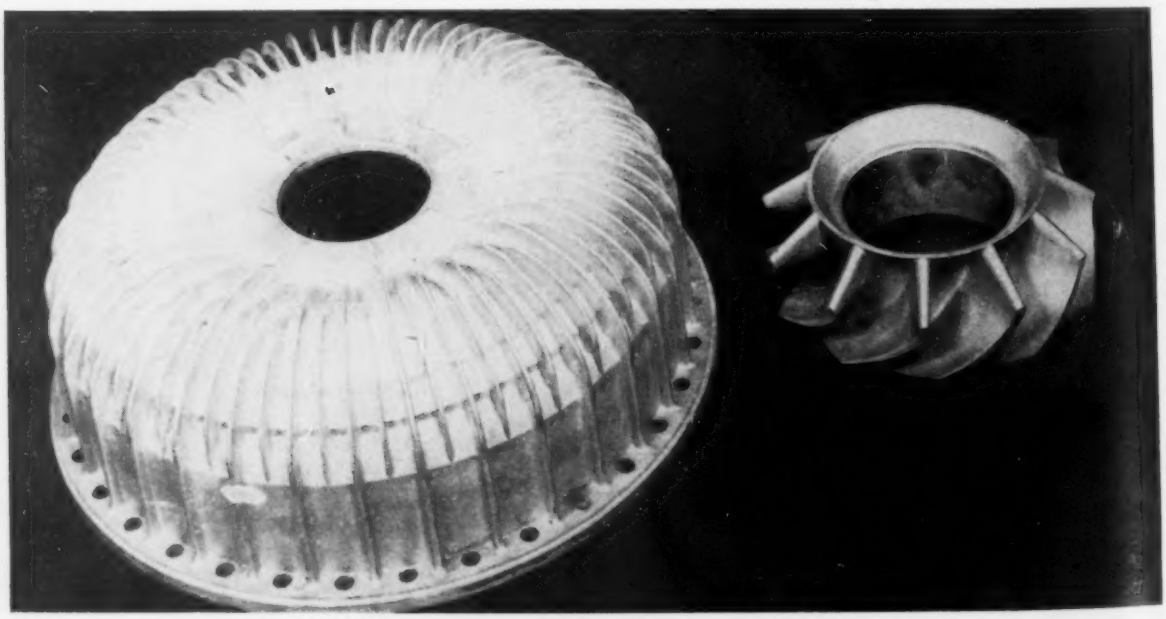
By J. J. Obrzut
Metalfinishing Editor

◆ Large scale application of aluminum diecastings to automatic transmissions has underscored the growing importance of diecastings for highly stressed functional parts . . . Diecasting provides a low cost method of making complex parts to close tolerances at high production rates.

◆ Developing the dies and production methods for making diecast transmission parts presented engineers of Precision Castings Co., Inc., and Ford Motor Co. with several tough problems . . . Hardest dies to build were those for a converter housing with external fins and internal slots, and for the stator with its radial-helical blades.

◆ USE OF DIECASTINGS in automatic transmissions is generally increasing at a rapid rate. This intensive use of diecastings for highly stressed working parts is largely based on advantages inherent in diecastings and peculiar to their method of manufacture. No other method provides parts of comparable complexity and quality at equally low cost on a production basis.

The type of transmission selected by Ford Motor Co. for Ford and Mercury cars—a torque-converter combined with 3-speed gear box—was governed by design considerations and factors of cost and weight. The transmission weighs



COOLING fins on impeller housing require precise die work. Stator, right, is cast in one piece.

ry Uses More for Working Parts

just 86 lb more than the standard Ford transmission.

The decision to make maximum use of aluminum diecastings throughout the transmission was instrumental in achieving weight and cost objectives. Performance of the diecast parts under high load and stress, indicates that industry can make substantial savings through application of this method to functional parts.

Ford's long previous experience with diecasting showed the process has four basic advantages: (1) You can get closer to what you want with a diecasting. (2) You can usually reduce overall weight. (3) You can reduce assembly and machining costs. (4) Parts can be made with a minimum of capital equipment.

Die design critical

Most of the 24 transmission parts designed for diecasting, 4 in the converter and 20 in the gear box, were highly complex. They required fine finish, close dimensional tolerances, thin walls and some sharp corners. These requirements demanded highly skilled, integrated diecasting and engineering facilities.

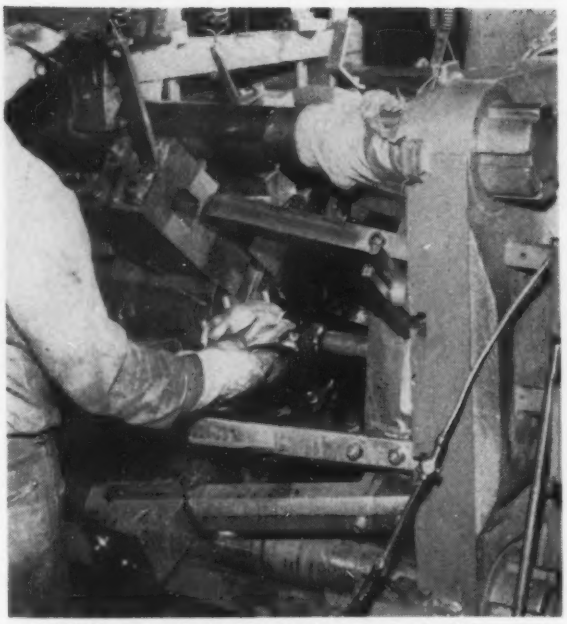
Two of these parts, the impeller housing and the stator, presented problems in diecasting techniques that called for special die development work. Precision Castings Co., Inc., at Fayetteville, N. Y., and Cleveland, along with other leading diecasters, went to work on the die design and production problems. After a year of experiment and testing, they came up with the die design and solutions to the production problems.

Blades inserted in housing

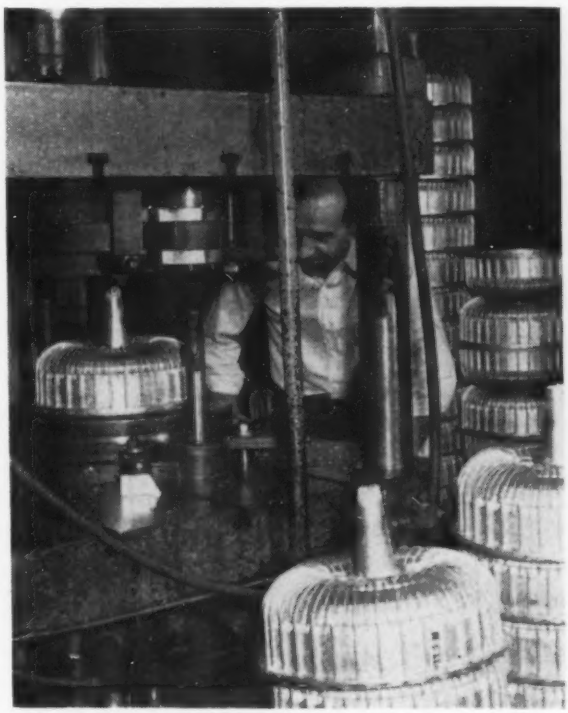
The impeller housing was the first design to employ a method of fabrication where the housing was diecast and 31 stamped steel blades inserted in as-cast slots to form the converter pump. This eliminated welding and brazing. Rollover tabs were used to secure the blades. It was necessary to diecast a concentric and balanced part with a high degree of uniformity. Integral, external fins required to air cool the transmission further complicated die design.

The independent transmission cooling system draws cool air through a port in the lower left side of the converter housing and discharges it at the lower right side. It provides maximum cooling when the converter needs it.

To increase die life it was necessary to in-



LARGE, COMPLICATED die is required to cast stator with its many radial-helical rings. Note slides to control side movement of large die.



OUTSIDE DIAMETER and 34 holes in impeller housing are trimmed and part degated in press.

STATOR IS DEGATED, inside diameter trimmed on Multipress. Flash is trimmed, right.

crease width of the 124 internal slots in the converter housing to 3/32 in. Narrower die projections would have made die costs and maintenance prohibitive. All peripheral attachment holes were used in the as-cast condition.

Proper control of porosity is essential. Parts are impregnated on a production basis, then tested 100 pct. Castings must hold air at 90 psi.

Aluminum was selected because of its special physical properties. It has good heat conducting and dissipating characteristics, especially valuable in making impeller housings. Much of the heat generated by oil in the impeller is dissipated through fins on the outside of the housing. Its light weight is an advantage. Since the housing acts as a fly-wheel when the transmission is in use, it is important that there be minimum inertia to overcome when the unit starts to move.

SPLIT STEEL BAND is Heliarc welded to diecast stator to form shroud transmission component.

The high silicon alloys used are strong and tough, and meet the specifications for SAE alloys E305 and E308. The latter alloy developed during World War II, has an as-cast tensile strength of 38,000 psi and a hardness of approximately 78 Bhn.

Several methods tried

Most complicated part to diecast is the stator, or reactor wheel, which his integrally cast blades. Even though this component was designed for diecasting, design and construction of a practical high production die was a major problem.

Precision's tool engineers had to find a means of making a die capable of casting in one piece a stator with 11 radial-helical blades of high strength and accuracy. After experimenting with several methods of generating blades a satisfactory die was built. Only minor changes in the trailing edges of the blades were made to insure satisfactory filling of the die at the edge.

The final die, a complex unit in which the outer portions bearing the blade generating members move in and out radially, produced castings of required accuracy and strength. Later stator dies have been improved. A new

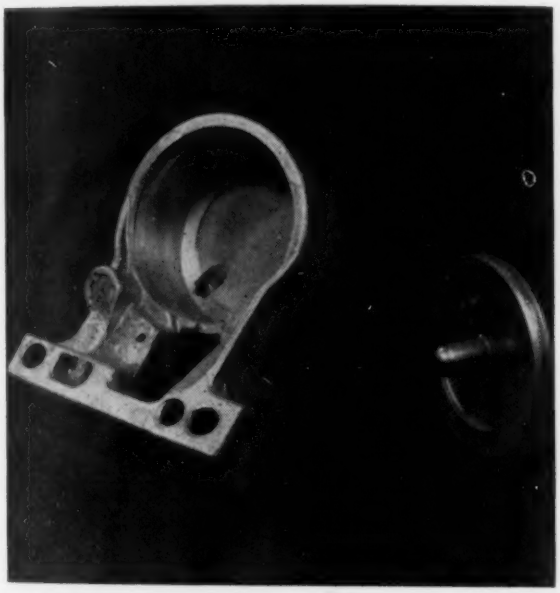
die recently completed is considerably smaller and lighter and has improved mechanical actions.

Valve bodies, control center of automatic transmission functions, would be difficult to fabricate by any process other than diecasting at comparable costs and production rates. These units have intricate, interlocking coring systems. Interlocking coring is designed to achieve minimum machining, reduction of metal, and to maintain uniform wall thickness throughout. Cores of the die must be exceptionally smooth.

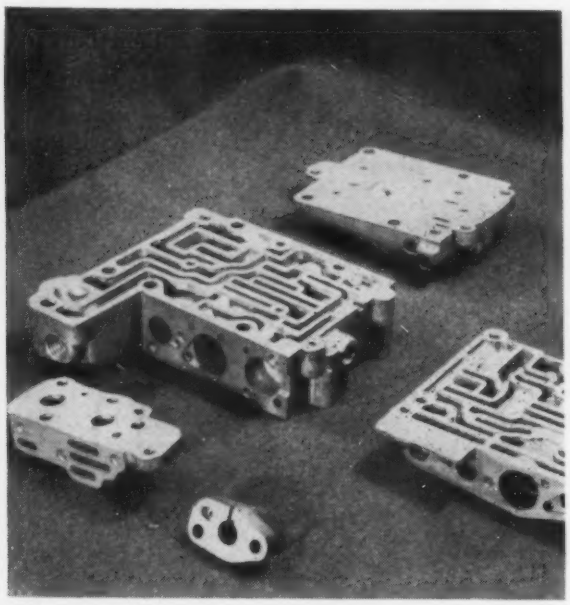
Front and rear servo assemblies also require precision casting and high strength to withstand comparatively high stress. Diecast parts include front servo body, sleeve, piston and actuating lever, and the rear servo body and piston The governor body, located on the output shaft, is another diecast part subject to stress. Most of the 24 diecast components must withstand stresses and loads of varying severity.

Tolerances as low as 0.005 in. in the as-cast condition were required on many dimensions to keep machining at a minimum. The many valve ports had to be precisely located with respect to each other thus increasing the precision requirements. Tolerances on valve body cores had to be held to 0.001 in. with closely controlled concentricity. Actually, a high degree of precision is built into a small space through precision diecasting.

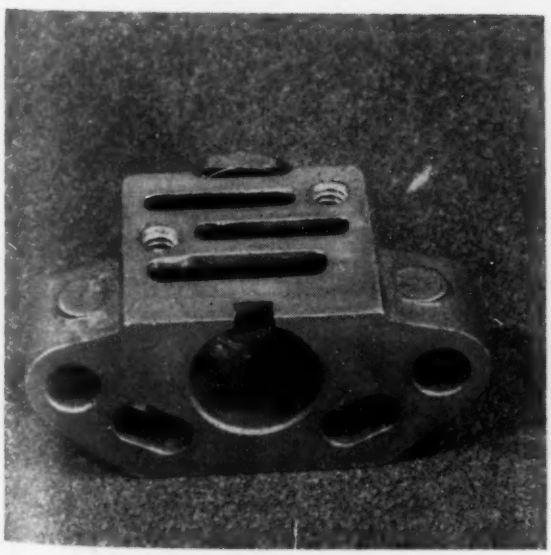
No machining is required at Precision Castings two plants since tolerances achieved were lower than anticipated. Parts are trimmed on special machines and presses tooled for high production.



Body and piston . . .



Control valve castings . . .



Intricate valve body . . .

Front servo parts . . .

Less grinding—

Bosses Coined Accurately, Quickly

◆ COINING has proved remarkably useful in the fast, accurate fabrication of small parts produced by International Business Machines Corp., at its Endicott, N. Y., plant. Heavy presses are required but they produce the desired results in parts of varying thicknesses, with dimensions held to close limits. The need for grinding is greatly reduced, and in some cases completely eliminated. The method rapidly produces parts with excellent surface smoothness.

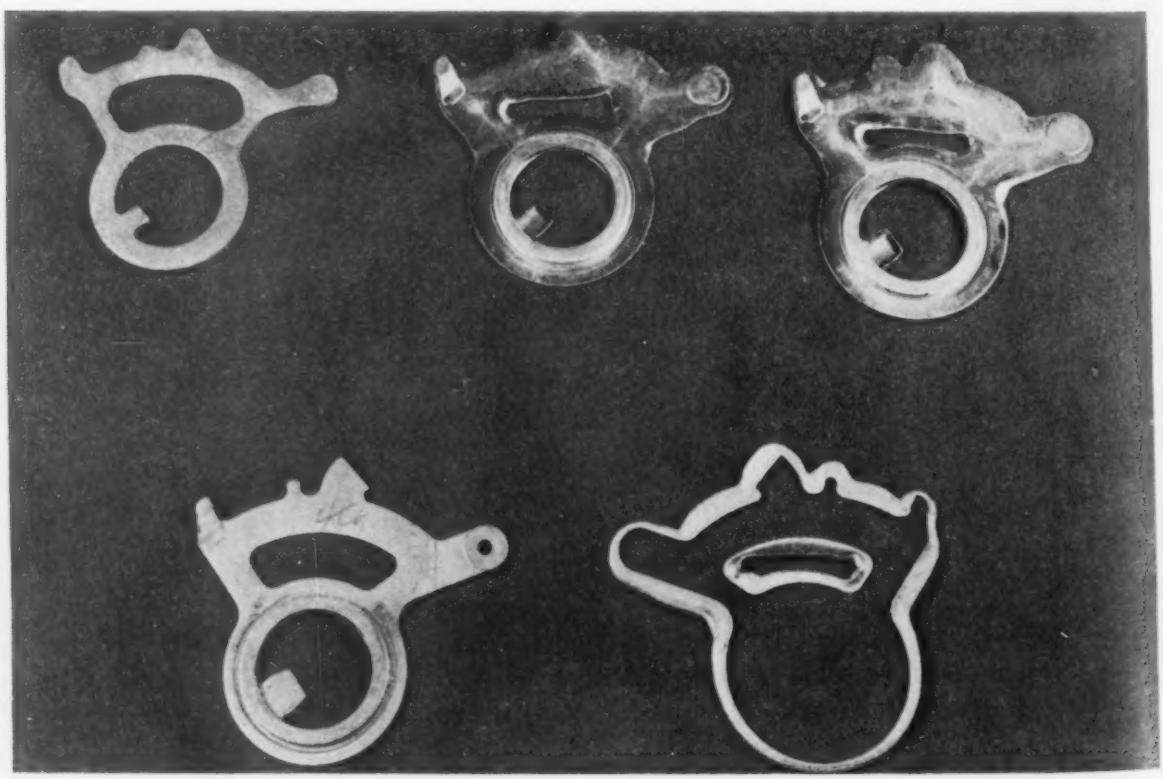
Coining is often used to raise small bosses that cannot be formed as economically by other methods. Such bosses provide increased thickness for bearing holes or for local strengthening, and often serve a locating function for later operations.

A typical case is a print wheel arm. Its shape is formed by a hub-like portion with two radial extensions thickened at their outer ends to accommodat bosses. A web-like section connects the radial extensions of the blanked part.

In making the stamping, 1010 cold rolled steel 0.097 in. thick is first blanked out to shape. Blanks have a hardness of RB 50. To improve their coining properties, the blanks are cadmium plated. If cadmium is not available, a castor oil coating is substituted.

Coining is done in two blows, one in each of two dies. On the first blow, average thickness is reduced to about 0.045 in., or 0.010 to 0.015 in. above finished size. After the second blow, average thickness is 0.032 in. and the bosses are 0.040 in. thick. Final hardness is RB 75. Coining is done in a 600-ton clearing press of the knuckle lever type making about 400 working strokes per min.

After coining, an annular groove is cut around the hub hole, leaving metal only 0.012 in. thick at the bottom of the groove. A final operation trims off the flash and pierces a hole to size in one of the bosses.



HUB SECTION AND BOSSES at ends of arms of this print wheel are raised by coining. At top, a blanking and two coinings. At bottom, groove machining and piercing, and trim.

every grade of ZINC

for urgent military and

civilian requirements

SLAB ZINC

PRIME WESTERN

SELECT

BRASS SPECIAL

INTERMEDIATE

HIGH GRADE

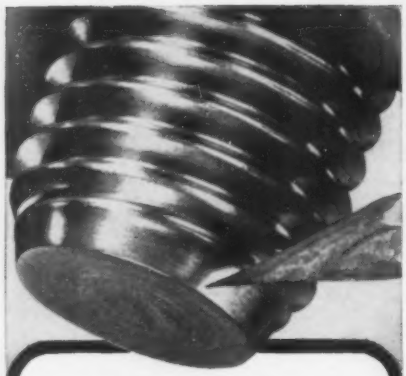
SPECIAL HIGH GRADE

AMERICAN ZINC SALES COMPANY

Distributors for

AMERICAN ZINC, LEAD & SMELTING COMPANY

Columbus, O. Chicago St. Louis New York



TOUGHER!

Allen

LEADER POINT CAP SCREWS

Dropping, knocking against metal surfaces and faulty line-up are major causes of damaged threads. Allen's new unthreaded leader point substantially reduces the causes of screw thread injury, or damage to threaded holes. Grip Heads, precision fit sockets that adhere to the key, *plus* the new leader points, make Allens the world's easiest starting cap screws, particularly in inaccessible spots. Sold *only* thru leading Industrial Distributors.

ALLEN

MANUFACTURING COMPANY

Hartford 2, Connecticut, U.S.A.

ALLEN HEAD

Technical Briefs

Communication:

Airtubes link production control centers.

How to keep each machine doing the job it is best suited for most of the time is a problem facing most companies making a variety of products and models with comparatively few types of machines.

Delay in receipt of materials at the machine, too long and too frequent set-up, excessive downtime can all be minimized if the production control system is intelligently planned and closely integrated in the manufacturing process.

Cut Time To Bone

Shrinking delivery time and reduced manufacturing costs achieved over the last 5 years by the Reliance Electric & Engineering Co., Cleveland, maker of motor drives and controls, clearly indicate the key to effective control is to eliminate delay in the production control system itself.

The production control department at the Ashtabula, Ohio, plant consists of a central control room and three widely-separated dispatch booths in the receiving area, machine shop, and the fabricating and welding department.

Each dispatch outpost is linked directly to the central control room by an Airtube system, manufactured by Lamson Corp. of Syracuse, handles all paperwork between stations in production planning, routing and work scheduling.

The pneumatic tube line between the central control room and the receiving department about 450 ft away permits the central control room to assign critical materials to the proper production point immediately upon receipt.

Short Travel Time

Two dispatch stations, both about 300 ft from the central control room, are located in the working areas as close as possible to production equipment. Paperwork is then conveyed manually only a few feet, requiring less than 10 seconds to travel in the pneumatic-tube carrier between the dispatch booth and the central control room.

Thus, although proper production control at Ashtabula requires a large assortment of records and copies at many process points, simple, rapid communication through the pneumatic-tube system keeps the paperwork well ahead of the machines.

Start of trip . . .

Branch center in shop . . .

IF YOU WANT MORE DATA

You may secure additional information on any item briefed in this section by using the reply card on page 99. Just indicate the page on which it appears. Be sure to note exactly the information wanted.

Steelmaking:

Dust meter checks cleanliness of blast-furnace gas.

More efficient measurement of the cleanliness of blast-furnace gas has been made possible with a new photoelectric dust meter developed by the British Iron and Steel Research Assn., it is reported.

Where dust is suspended in gas reaching the coke-oven battery there is a marked tendency for the particles to form a deposit which sinters and produces an insulating layer on the refractory brickwork.

Source of Troubles

This prevents efficient heat transference from the firing chamber to the coking oven. Continued dust deposition can cause eventual blockage of the path taken by gases through the refractory. This sometimes requires complete rebricking of this part of the installation.

Although measurement of dust concentration by gravimetric methods is accurate, it is made after passage of the particles through the plant. This makes it difficult to determine whether a uniform dust concentration has existed over the set measuring period.

Acts As Monitor

The deposit may have been caused by a few short periods of high dust concentration resulting from intermittent failure or overloading of some sections of the cleaning plant.

This has been overcome by design of a continuously recording instrument, made by Radiovisor Parent, Ltd., which monitors the gases at any point in the main.

Four Main Components

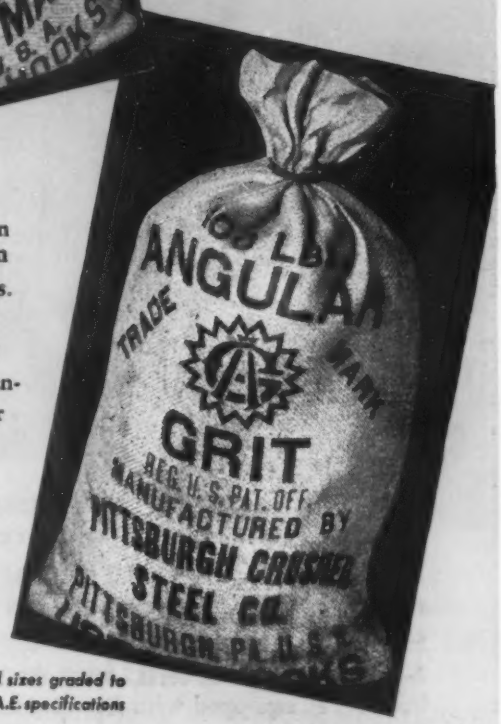
The instrument comprises four main components:

1. The sampling chamber, in which are installed photo-electric

Turn Page

"Certified" Abrasives

CLEAN MORE CASTINGS PER DAY!



SPEED UP production in *your* blast cleaning room with "Certified" Abrasives. "Certified" Samson Shot and Angular Grit are first choice in hundreds of foundries...give better, longer performance because they're made *extra-tough* by a special *automatically controlled* hardening process. Specify "Certified" and start cleaning more castings per day.

All sizes graded to S.A.E. specifications

Experienced Foundrymen say:

Always specify "Certified"

ACCEPTED AND USED FOR OVER 55 YEARS

PITTSBURGH CRUSHED STEEL CO., Pittsburgh, Pa.
STEEL SHOT AND GRIT CO., Boston, Mass.
MEMBER FEMA

Ready-Power offers 4 important advantages

OVER ALL OTHER GAS-ELECTRIC DRIVES

1—ONLY READY-POWER UNITS ARE INTERCHANGEABLE thus permitting maintenance of power units without costly truck downtime.

2—READY-POWER UNITS ARE THE ORIGINAL GAS-ELECTRIC DRIVE. Today they are backed by more than 25 years of know-how and experience.

3—ONLY READY-POWER OFFERS DIESEL-ELECTRIC POWER. Records show that trucks equipped with Diesel-electric operate at the lowest known costs per ton-mile.

4—ONLY READY-POWER OFFERS A FULL RANGE of gas-electric and Diesel-electric power units to match the exact requirements of ALL makes of electric trucks.

Remember . . . your truck is no better than its power. It PAYS to convert present electric trucks to Ready-Power . . . and it PAYS to specify Ready-Power when buying new trucks.

CONTINUOUS-DUTY POWER UNITS

The READY-POWER Co.

3822 Grand River Ave., Detroit 8, Michigan

Manufacturers of Gas and Diesel Engine-Driven Generators and Air Conditioning Units; Gas and Diesel-Electric Power Units for Industrial Trucks

cells, the light source, and an optical system.

2. A thermionic valve amplifier, together with its stabilizer, power supplies, and setting-up controls.

3. A 7-in. diam. indicator-relay meter incorporating a small contactor for connection to an alarm system.

(4) A continuous 3½-in. wide strip recorder.

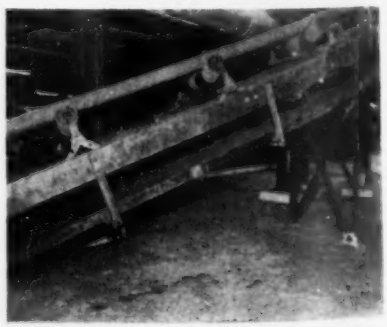
How It Works

The instrument works on the "light-scattering" technique. By introducing clean air into the viewing chamber a minimum of light scatter takes place, and a minimum current is passed by the photocells.

Output from the electronic amplifier is "backed off" so that in this condition a zero reading is shown on the recorder and meter. Any increase in light scatter due to dust particles increases the photo-multiplier current.

Develop New Heat Indicator

A temperature indicator housed in a flexible steel wire rope, for use in detecting deterioration in stored grains, has been developed by Jones & Laughlin Steel Corp., Pittsburgh. The indicator consists of a plastic-coated copper circuit, with nickel-copper thermocouples every 5 feet, inside the wire rope. The indicator is being made at J & L's, Muncy, Pa., Wire Rope Div. under license from the PTC Cable Company, St. Paul, Minn.



WROUGHT IRON catch pan under conveyor belt of coal cleaning plant of Consolidation Coal Co.'s Worthington, W. Va., plant helps check corrosive action from combined moisture and sulfur.

Turn Page

lifting restrictions on nickel has improved quality of univan castings

UNION CHARGING BOXES and PEELS
cast in nickel UNIVAN steel

With nickel available in greater supply, you can now get even better quality castings of time-proved nickel UNIVAN steel—such as charging boxes, peels, bearing covers, couplings and spindles, tongs and tong levers.

UNIVAN has greater resistance to firecracking than carbon steel, due to its nickel content. And its higher tensile strength—about 50% more than carbon steel—provides greater resistance to torsional twist and shock.

If you're not satisfied with the life of your present castings, give UNIVAN castings a chance to prove their long-life performance on your toughest jobs.

Just send us your blueprints—for more complete information and a quotation on your requirements.

BLAW-KNOX

BLAW-KNOX COMPANY . . . UNION STEEL CASTINGS DIVISION
PITTSBURGH 1, PENNSYLVANIA

UNION PRODUCTS: charging boxes • peels • bearing covers • slag pots • tongs and tong levers • universal couplings and spindles • gears and pinions • ingot cars • charging box cars • special UNIVAN and ARMOR steel castings

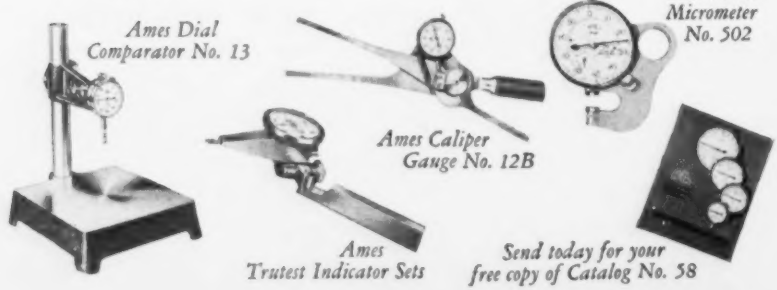
AMES

...the preferred

Ames Long Range Dial Indicator No. 262

...not because they cost more (in the long run they're more economical) but because they're completely *impersonal.* They do their measuring jobs absolutely independent of the human hand.

For more than 50 years, Ames Micrometer Dial Gauges and Indicators have kept pace with increasingly critical precision requirements. Today, each part of every Ames product is carefully built by exclusive Ames methods and machines from the materials best suited to its function — and 100% checked for accuracy. As a result, all Ames products are extremely accurate and sensitive, yet rugged and tough — to give you *longer* service with *less* down-time.



Ames Dial Comparator No. 13

Ames Dial Micrometer No. 502

Ames Caliper Gauge No. 12B

Ames Trutest Indicator Sets

Send today for your free copy of Catalog No. 58

Representatives in principal cities. B. C. AMES CO. *25 Ames Street Waltham 54, Mass.*

Mfgr. of Micrometer Dial Gauges • Micrometer Dial Indicators

Foundry:

Close quality control aids in pouring magnesium casting.

One of the largest magnesium castings ever poured, ordered by Western Electric as a base for military electronic equipment, was recently produced by Rolle Mfg. Co., Lansdale, Pa.

Casting of even relatively small parts in magnesium presents problems and great size multiplies the problems. Only by taking advantage of every quality control procedure available could the large casting be poured to successfully meet requirements.

Checks Aid Quality

Tests for moisture content, permeability, and core strength of the sand were used. Quantometer readings were taken from the melt to assure chemical conformation of the magnesium alloy, and the readings were later double checked by wet analysis.

The heat was laboratory tested for tensile strength, elongation, yield, hardness, and numerous other physical characteristics. In addition to dimensional checks for size accuracy and tolerances, the entire surface of the casting was Zyglo treated to detect minute surface cracks and examined by X-ray radiography to eliminate the possibility of internal imperfections.

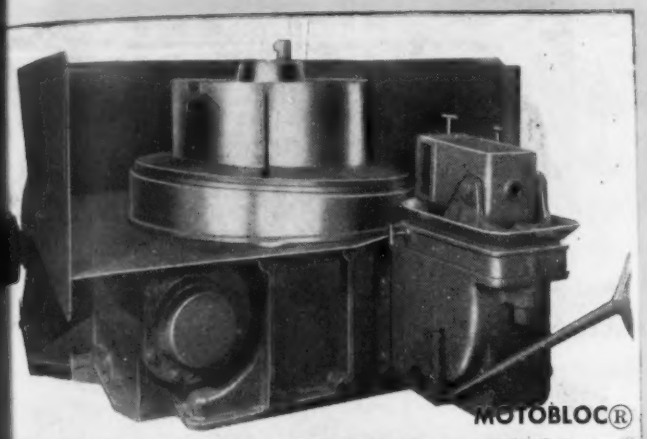
Weighing approximately 1630 lb, the 114 x 93 x 33 in. casting required 197 cores which were contained in a flask measuring 128 x 112 x 48 in.

Magnesium:
Casting weighs 1630 lb ...

Turn Page

VAUGHN

NAME IT!

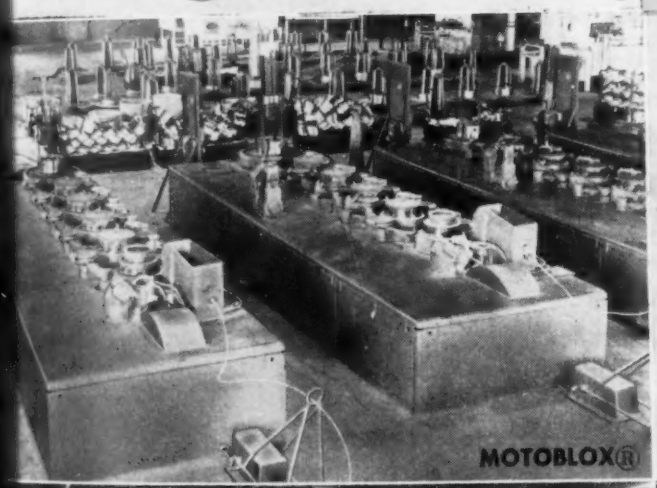


MOTOBLOC®

—you name your cold drawing requirement . . .

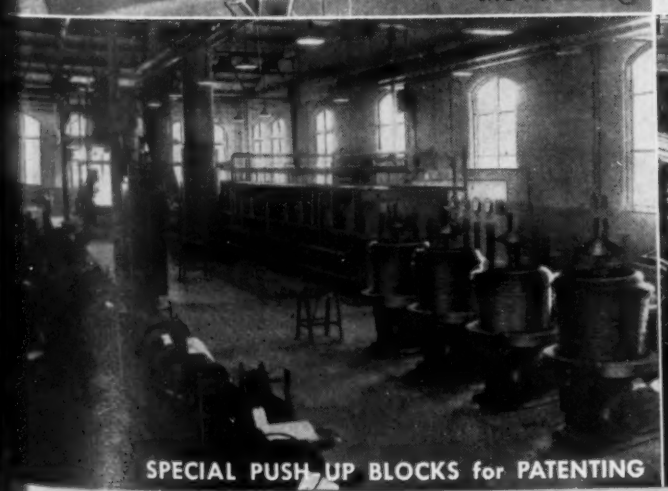
—let us name the profit making VAUGHN MACHINE for your job!

VAUGHN means *everything* in Cold Drawing Equipment—and a great deal in constructive consultation. We will be happy to translate your production requirements in terms of Vaughn machine productivity, at your convenience, and without obligation.

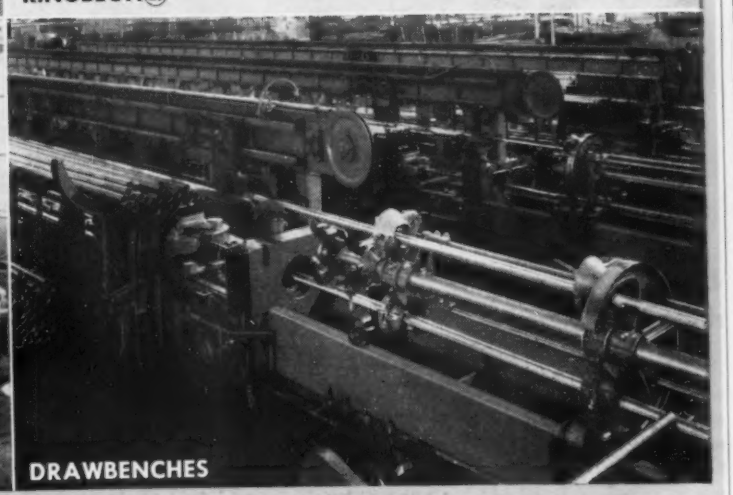


MOTOBLOX®

RINGBLOX®



SPECIAL PUSH-UP BLOCKS for PATENTING



DRAWBENCHES

"Quick on the Draw"

THE VAUGHN MACHINERY CO.

CUYAHOGA FALLS, OHIO, U.S.A.

COMPLETE COLD DRAWING EQUIPMENT—Continuous or Single Hole . . . for the Largest Bars & Tubes . . . for the Smallest Wire . . . Ferrous, Non-Ferrous Materials or their Alloys.

MUELLER BRASS CO.

600 SERIES BEARING ALLOYS

FORGINGS • ROD • SCREW MACHINE PRODUCTS

proving their quality throughout American industry

Mueller Brass Co. "600" series bearing bronzes are lightweight, high strength copper-zinc base alloys with excellent bearing and mechanical properties, non-galling and non-seizing characteristics and good resistance to corrosion. They have a dense, homogeneous structure that reduces machining time and metal waste and increases tool life. As bearings, gears, connecting rods, cams and other parts, they will generally save you considerable money and outperform and outlast the cast phosphor bronzes. Write today for complete information about the MUELLER BRASS CO. "600" series alloys for forgings, rod or screw machine products.

ix members
f "600" series
. . one for every purpose

here are six members in the "600" series group, nd they possess fundamentally similar charac-ristics. But slight differences in the properties each are produced through variations in the asic formula. Thus, each metal is best suited to erform a specific set of functions. And as a roup, they are suitable for a wide range of pplications.

119

MUELLER BRASS CO. PORT HURON 24, MICHIGAN

Casting:

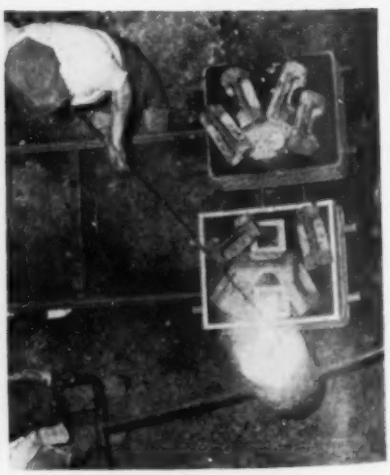
Cellophane covers keep dirt out of sand molds.

A simple but effective device to keep dirt and other impurities from entering sand molds has been designed by technicians at Cooper Alloy Foundry Co., Hillside, N. J.

Squares of cellophane glued to light cardboard frames are placed over the open heads as soon as the molds have been closed. Generally they are held to the mold by wooden toothpicks, but on the larger molds where the mold is too hard for the toothpicks, they are stapled into place.

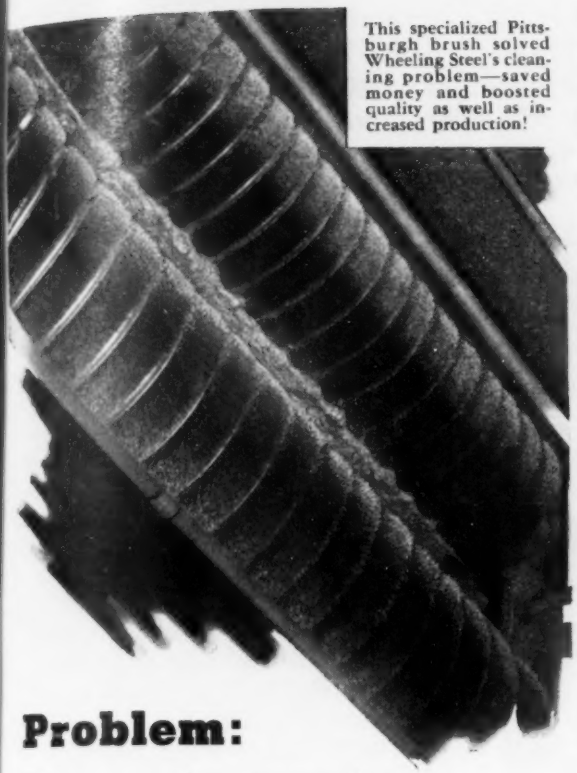
The cellophane covers are fastened on two corners only, thus allowing for continual ventilation and avoiding moisture condensation. Just before pouring, the covers are brushed clean and the molten stainless steel is then poured right through the transparent cellophane.

Keeps out dirt . . .



Pour through cover . . .

Turn Page



This specialized Pittsburgh brush solved Wheeling Steel's cleaning problem—saved money and boosted quality as well as increased production!

Problem:

How to be tough and soft at the same time!

That was the problem presented to the Pittsburgh Plate Glass Company by the Steelcrete Division of Wheeling Steel, Beech Bottom, W. Va.—and it required a specialized Pittsburgh brush to solve it!

Large sheets of expanded metal had to be cleaned without impairing the surface texture, yet the brush had to cut through tough scale and remove burrs. A special steel wire was chosen, made up into brushes, and applied to the problem. Result? Combining the right amounts of toughness AND softness, the brush completely eliminated burrs in a matter of minutes, leaving the face of the metal unharmed. Moreover, cleaning is quicker and costs less than with other brushes!

WRITE TODAY for your free copy of our new booklet that shows, thru actual case histories, how Pittsburgh can help cut *your* brushing costs. Address: Pittsburgh Plate Glass Company, *Brush Div.*, Dept. W-10, 3221 Frederick Ave., Baltimore 29, Md.

PITTSBURGH

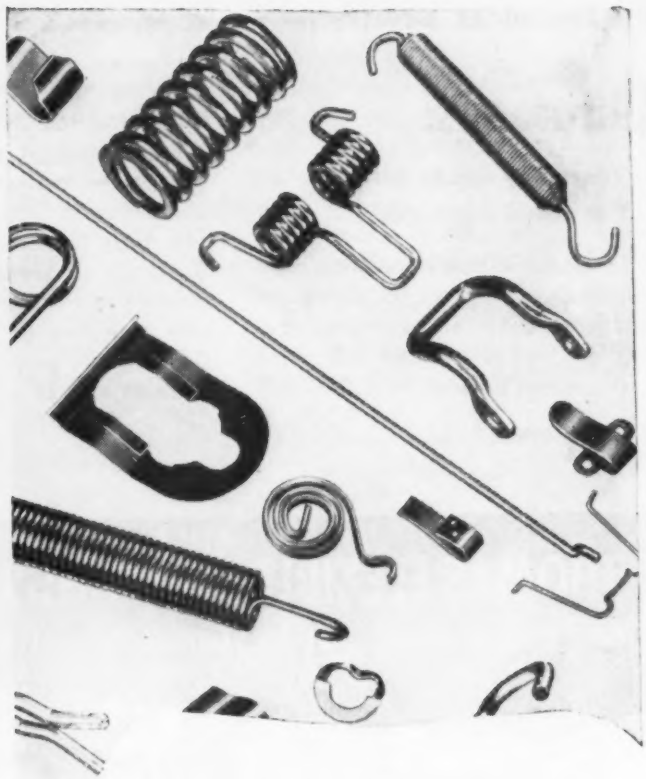
Power Driven

BRUSHES

BRUSHES • PAINTS • GLASS • CHEMICALS • PLASTICS • FIBER GLASS

PITTSBURGH PLATE GLASS COMPANY

IN CANADA: CANADIAN PITTSBURGH INDUSTRIES LIMITED



COIL SPRING SAYS:

Our ability to translate your blueprints into precision products is second to none. Our record for dependability and quality production is accepted fact to all who have used our facilities. Your best solution to any spring or small parts problem is to pass it along to U. S. A call or letter, today, is all that's needed.

No order too large or too small!

The U. S. STEEL WIRE SPRING Co.

7800 FINNEY AVE. • MICHIGAN 1-6315

CLEVELAND 5, OHIO

Ultrasonics:

Thermally stable delay line may be possible.

Isoelastic alloys containing combinations of iron, nickel, chromium and other minor elements may provide a thermally stable delay line with respect to time delay, a recent study by the National Bureau of Standards has found. The study involved use of metal ultrasonic delay lines in electronic computers and ordnance devices.

A delay line is a device for slowing down or storing a signal in an electric circuit. At radio frequencies this can be done by transforming the electrical signal into a much slower sound signal and propagating it through an appropriate medium. After a given length of time the sound signal is converted to an electric signal again. Delay lines are employed in radar, computers, and many new ordnance devices.

New Use for Old Alloys

The use of isoelastic alloys for delay lines is apparently new, although such materials have been known and used in other applications for over 50 years. Isoelastic alloys are ones which have a constant modulus of elasticity with respect to temperature changes.

Their primary use to date has been in watch springs and similar applications. Since one of the requirements for ordnance delay lines is ability to give constant signal delay regardless of temperature changes, only the isoelastic alloys and relatively few other materials can be considered for such a use.

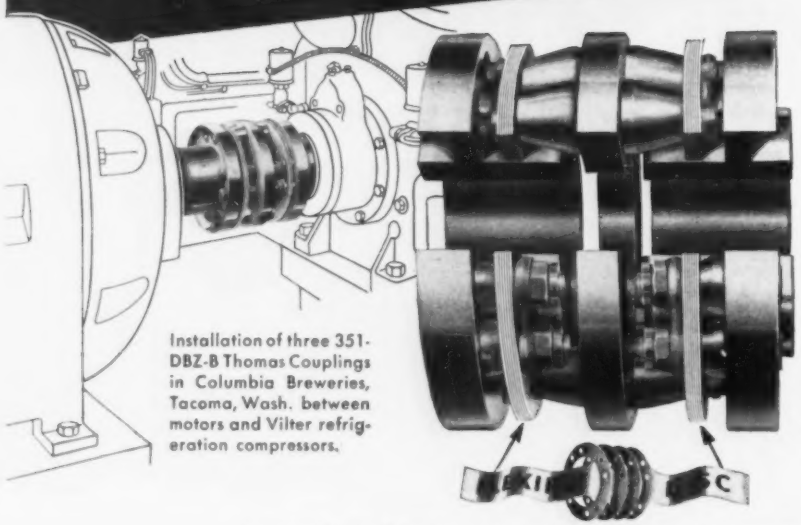
Up to the present time quartz, mercury, water, and certain magnesium alloys have exhibited some of the qualities needed for use in ultrasonic delay lines. Quartz and mercury have been used fairly extensively in certain applications, but both have drawbacks. Quartz is expensive and hard to shape or machine while mercury is thermally unstable and is susceptible to mechanical shock, leakage, aging and contamination.

Long Delay Lines

Mercury has been used, however, in the long delay lines of the National Bureau of Standards Eastern Automatic Computer. In some devices it is desirable to use a material that will transmit 10-megacycle pulses, without appreciable attenuation or distortion of the signal, and give a 50-microsecond time delay. At the same time the material must be thermally stable and be easily shaped into specific dimensions. No delay lines developed so far have all these qualities.

Before the delay lines could be investigated, certain problems relating to the transducers used to transform the signal had to be

THOMAS FLEXIBLE COUPLINGS...
for more years of better service!

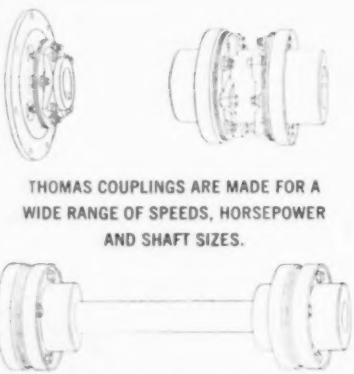


Installation of three 351-DBZ-B Thomas Couplings in Columbia Breweries, Tacoma, Wash. between motors and Vilter refrigeration compressors.

Patented Flexible Disc Rings of special steel transmit the power and provide for parallel and angular misalignment as well as free end float.

DISTINCTIVE ADVANTAGES

FACTS	EXPLANATION
NO MAINTENANCE	Requires No Attention. Visual Inspection While Operating.
NO LUBRICATION	No Wearing Parts. Freedom from Shut-downs.
NO BACKLASH	No Loose Parts. All Parts Solidly Bolted.
CAN NOT "CREATE" THRUST	Free End Float under Load and Misalignment. No Rubbing Action to cause Axial Movement.
PERMANENT TORSIONAL CHARACTERISTICS	Drives Like a Solid Coupling. Elastic Constant Does Not Change. Original Balance is Maintained.



THOMAS COUPLINGS ARE MADE FOR A WIDE RANGE OF SPEEDS, HORSEPOWER AND SHAFT SIZES.

Write for our new Engineering Catalog No. 51A

THOMAS

THOMAS FLEXIBLE COUPLING COMPANY
Largest Exclusive Coupling Manufacturer in the World
WARREN, PENNSYLVANIA, U.S.A.

Crystals were cemented directly to delay lines . . .

solved. Quartz-crystal transducers were found to be the most efficient elements. The crystals were cut so that they transmitted only shear waves.

Carefully Matched

Careful acoustical matching between delay line and crystal was required. The Bureau adopted a buffer technique for preliminary test in which crystals were cemented to short lengths of magnesium alloy rods.

A special clamp was devised to hold the unmounted ends of these buffers against the delay lines under test. In the second method for attaching crystals to delay lines, the one which was used in the final investigations, crystals were cemented directly to the delay lines as they would have to be in potential service use. Best signal characteristics were obtained using epoxy type cement and overcuring it.

Delay Line Varied

Although the principal objective was to obtain a line of a length which would produce a delay of 50 microseconds, specimens of various lengths were studied. This was done to determine the attenuation per unit length and the transducer or buffer loss associated with the various materials.

Delay line length varied from ¼ inch to over six inches. The NBS study revealed that there was little effect on the transmission of ultrasound attributable to specimen cross section so long as it was not less than transducer cross section.

NBS investigated 14 materials. Characteristics such as attenuation, distortion, and temperature response were studied. Total attenuation of a high-frequency signal is the result of several factors.

Besides losses in the delay line itself, there are losses due to the crystal transducer and due to the bond between the crystal and delay line. Attenuation losses of the line have been attributed to elastic hysteresis, sound scattering, and a sound diffusion process.

Principal Distortion Causes

Distortion also has several sources. It can be caused by the crystal transducer or by the matching between crystal and delay line. Internally, the principal sources of distortion are scattered signals which have been reflected or refracted back into the main beam.

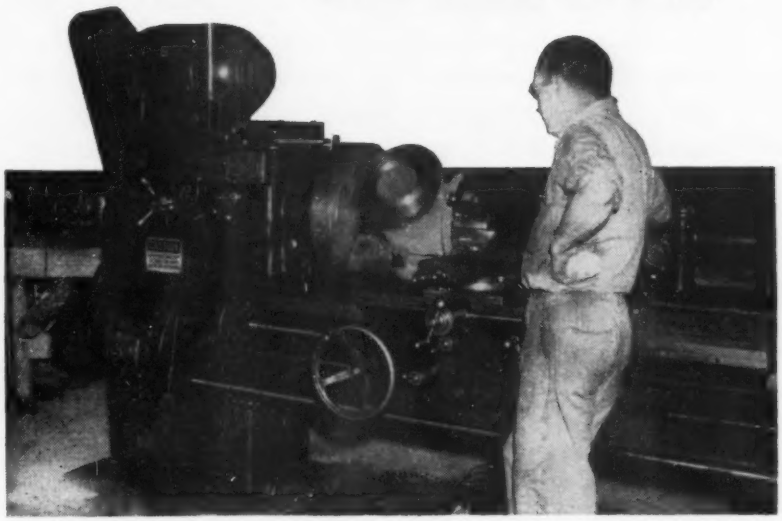
To study these effects, the laboratory made studies of the relationships between the transmission of ultrasound and such factors as chemical composition, cold deformation, annealing treatment, specimen length, and sound path cross section.

Stability Important

Most important quality sought was temperature stability of time delay over the range from −50° to +200°C. The delay time of a

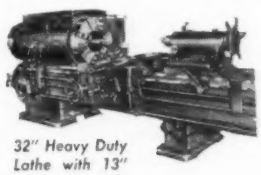
Turn Page

The First Lehmann HYDRATROL Lathe Ever Sold is Still Going Strong!



18 Years of Grueling Service for Lathe #5155

Here is dramatic proof of the durability and rugged dependability of Lehmann HYDRATROL Lathes! The first Lehmann HYDRATROL, sold over 18 years ago, is still operating every day. The present owner of this Lathe. A. J. Flowers of the W. L. Flowers Machine and Welding Co., Alice, Texas, recently wrote us: "We are happy to say we are still operating the Lehmann Lathe Serial No. 5155. We have averaged operating the lathe sixteen hours each day. It is giving excellent service."



32" Heavy Duty Lathe with 13" Hole in Spindle

Remember these important HYDRATROL features:

• 16 spindle speed changes with only a "Twist of the Wrist" • Automatic slide rule co-ordinated with movement of handle shows spindle revolutions per minute and indicates cutting speeds in feet per minute • 16 forward and 8 reverse speeds • No need for intermediate stop; unnecessary to disengage the friction driving clutch to change speed • Hydraulic friction clutches and hydraulic brakes, self compensating • Automatic safety relay for harmless and easy engagement of positive clutches when speeds are changed • Spindle release for chucking • Safety-control lubrication with filtered oil • Gears constantly in mesh • Safe in operation • Simple construction and operation.

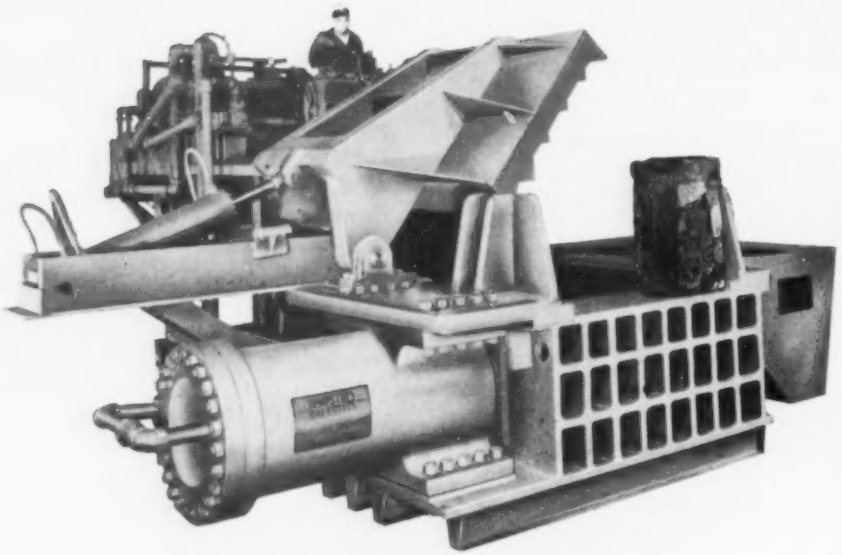
FIVE SIZES—18" to 36"

Small . . . . 18" up to 7⅛" Hole
Medium . . . 25" up to 12" Hole
Large . . . . 32" up to 13" Hole
Large . . . . 36" up to 16⅛" Hole
(Standard type lathes, 16" to 36")

For Catalog, additional information or recommendation write:

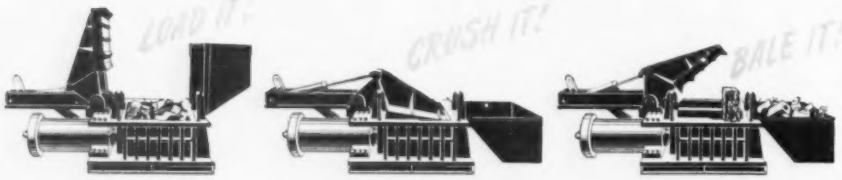
LEHMANN MACHINE COMPANY
GRAND at CHOUTEAU • ST. LOUIS 3, MO.

DIVISION OF NOVO ENGINE CO.



Here's the nearest thing to Automatic Scrap Metal Baling!

WHEN YOU BUY a Dempster-Balester you not only get a press built to take the punishment of baling scrap metal consistently day-in and day-out . . . bale-after-bale, but you also get the nearest thing to automatic baling. The Dempster-Balester's LOAD IT, CRUSH IT, BALE IT cycle (illustrated below) is a simple 1-2-3 continuous operation.



1—Skip Pan LOADS charging box. 2—Skip Pan returns to loading position while Auxiliary Compression Door CRUSHES scrap. 3—As Compression Door returns to upright position, charging box door closes . . . scrap is BALED and ejected. As each cycle ends another begins.

Without question, Dempster-Balesters are the simplest, most efficient presses baling scrap metal today! And you have six to choose from—three standard and three high speed models that turn out high density bales in capacities to meet any requirement up to 10 tons per hour. Write to us for complete information. A product of Dempster Brothers, Inc.

Sold In Canada by W. P. Favorite Company of Canada, Ltd., 418 Main Street, E., Hamilton, Ontario

Mfg. In Canada by Hamilton Bridge Company, Ltd., Hamilton, Ontario

DEMPSTER BALESTER

DEMPSTER BROTHERS, 324 Dempster Bldg., Knoxville 17, Tenn.

delay line is affected by the length and the shear modulus of the material.

For most metals, the temperature coefficient of the modulus is negative and of much greater magnitude than the positive expansion coefficient. Actually, the expansion coefficient is relatively small especially for certain alloys of iron and nickel. Consequently a thermally stable delay line material must have a very small negative temperature coefficient of shear modulus.

These Materials Studied

Materials studied included two magnesium alloys, a high purity and a commercial nickel, Invar, a 32 pct nickel-iron, and 18-8 Cr-Ni steel, a 1 pct carbon tool steel, an aluminum single crystal, and five isoelastic alloys. Of the isoelastic alloys three were of commercial origin, one was an experimental alloy, and one was a special alloy prepared at the Bureau.

Electronic apparatus consisted of an rf signal generator and amplifier; pulse, marker, and delay generators; an output cathode follower; and an oscilloscope. For attenuation studies, a pulse modulated signal was fed into both the ultrasonic delay line and directly into the oscilloscope.

Attenuation Determined

Outputs were applied to the vertical input of the oscilloscope. As the oscilloscope deflection sensitivity and circuit constants were known, the attenuation of the delay line oould be determined.

For delay time studies, the marker generator provided marker pulses for the vertical input of the oscilloscope and synchronized the pulse generator output which was being applied to the delay line.

The delay generator was synchronized by the pulse generator and provided in its output a delay pulse which was used to trigger the oscilloscope sweep. The sweep delay was variable over a wide range. By this method the expanded sweep could be observed over a wide range, facilitating accurate deter-

Turn Page

Let's face it!

HAVE YOU A DISASTER PLAN FOR YOUR PLANT?

BOMBS...OR FIRE...OR FLOOD...OR TORNADO ...you can handle them if you act now.

Let's face it... the threat of war and the atomic bomb has become a real part of our life—and will be with us for years. Fires, tornadoes and other disasters, too, can strike without warning.

Whatever the emergency is, everybody's going to want help at the same time. It may be hours before outside help reaches you. The best chance of survival for you and your workers—and the fastest way to get back into production—is to know what to do and be ready to do it. Disaster may happen TOMORROW. Take these simple precautions TODAY:

☐ **Call your local** Civil Defense Director. He'll help you set up a plan for your offices and plant—a plan that's safer, because it's integrated with community Civil Defense action.

☐ **Check contents** and locations of first-aid kits. Be sure they're adequate and up to date. Here, again, your CD Director can help. He'll advise you on supplies needed for injuries due to blast, radiation, etc.

☐ **Encourage personnel** to attend Red Cross First-Aid Training Courses. They may save your life.

☐ **Encourage your staff** and your community to have their homes prepared. Run ads in your plant paper, in local newspapers, over TV and radio, on bulletin boards. Your CD Director can show you ads and official CD films or literature that you can sponsor locally. Set the standard of preparedness in your plant city. There's no better way of building prestige and good community relations—and no greater way of helping America.

Act now . . . check off these four simple points . . . before it's too late.

A Nichrome-wound alundum tube furnace was used having a uniform temperature zone . . .

mination of the delay time of the delay line.

Test Chamber Built

For tests at elevated temperatures, a Nichrome-wound alundum tube furnace was used having a uniform temperature zone over the specimen length. Thermcouples were attached to the center and both ends of the delay line. In order to obtain subzero temperatures, a very simple but effective low-temperature test chamber was constructed.

It consisted of an open-top wooden box with holes drilled in its opposite ends. A thick-walled copper tube ran through the holes. The delay lines were inserted in the tube. By gradually filling the box with dry ice, the specimen was cooled slowly. The copper tube maintained effectively uniform temperatures over the specimen length.

Of the 14 metals and alloys investigated, only two of the isoelastic alloys possessed satisfactory temperature stability over the range from −50° to +200°C. These materials were alloys of iron, both containing approximately 36 pct nickel and 7 to 8 pct Cr—plus other minor constituents.

While mercury and the magnesium alloy have temperature coefficients of delay time of about 300 and 400 ppm per degree Centigrade, respectively, one of the isoelastic materials tested had a temperature coefficient of only 8 ppm per degree Centigrade. The second isoelastic alloy was nearly as good; it exhibited a constant delay time over the range from −50° to +170°C, with higher delay time over 170°C.

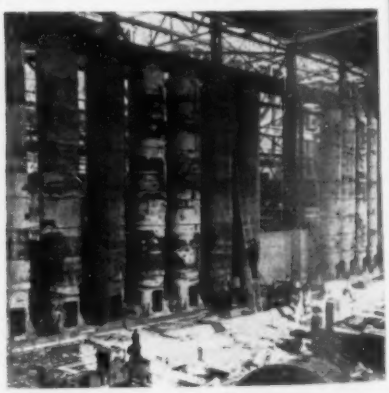
Materials:

Lightweight aluminum roofing materials developed.

To meet a growing demand for maintenance-free metal roofing material of thinner gage, Aluminum Co. of America has enlarged its line of industrial roofing materials with the addition of a new, lightweight corrugated aluminum sheet.

Made of the same durable high-strength alloy as the standard 0.032-in. material, the new aluminum corrugated industrial roofing and siding is only 0.024 in. thick.

The lightweight product will fill the need where narrow spans in the roof support structure do not require the extra high beam strength of the 0.032 in. material.



GIANT BOTTLES, eleven of them, each 38 ft high are required to hold the teriffic pressures generated by seven pumps for the 50,000 and 35,000-ton forging presses at Wyman-Gordon Co., Worcester, Mass. The presses are being built by Loewy-Hydropress for the Air Force heavy press program.

For All Sheldon Lathes less than 5 Years old...we have just published a new Parts List Manual, with:

. . . . every lathe part and sub-assembly illustrated, named, numbered and positioned on explanatory exploded drawings.

. . . . a section which illustrates and describes each of over 50 modern Attachments and Accessories to make your Sheldon Lathe even more versatile, productive and valuable to you.

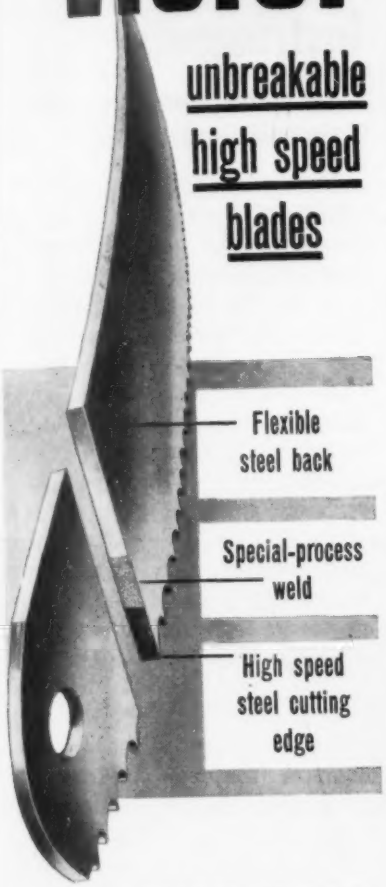
To get this valuable Parts List (and Accessory) Manual just write (1) the serial number of your Sheldon Lathe and (2) your name, and (3) your firm name and address, on a post card, letterhead, billhead or slip of paper and mail it to "Parts Manual".

SHELDON MACHINE CO., INC.
4224 North Knox Ave., Chicago 41, Illinois

USE

Victor

unbreakable high speed blades



COMPETITIVELY PRICED

For safety, Victor High Speed Flexible Blades are shatterproof. And, like *all* Victor Blades, they are made by exclusive processes, with special machinery, to unequalled quality standards, and remember, no premium price.

Your Victor distributor is the man to call, for Victor Hack Saw Blades and for the other tools and supplies he carries. We have selected him with care – for complete inventories, swift deliveries, helpful service, and quality products.

Sold Only Through Recognized Distributors

VICTOR

SAW WORKS, INC. • MIDDLETOWN, N.Y., U.S.A.

Makers of Hand and Power Hack Saw Blades; Frames; Metal & Wood Cutting Band Saw Blades.

—Technical Briefs—

Welding:

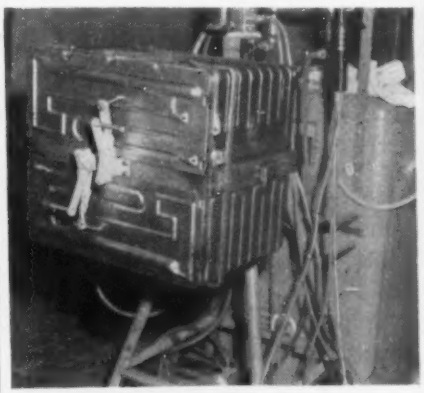
Evaporator units for refrigerators welded.

Evaporator units for refrigerators are now being assembled using Heliarc welding at substantially lower production times and with high quality welds, it is reported.

Two units of 3/32-in. deep drawn 1010 steel are clamped in a rotating jig, one upright, the other upside down. In the fabricating process every evaporator unit requires seven skip-welds, each ¾ in. long.

Takes 10 Seconds

When the welds are completed on one evaporator, a twirl of the jig brings the second unit in position for welding with no loss of time. Each skip-weld takes ten seconds, and in less than 2-½ min. two units with a total of 14 welds are completed.



Parts clamped in jig . . .

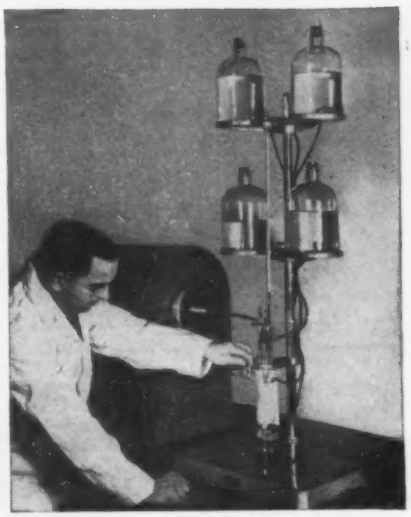
Quickly Heliarc welded . . .

Turn Page

PRACTICAL SULFUR ANALYSIS

Accurate Results in 3 MINUTES with the

DIETERT-DETROIT SULFUR DETERMINATOR



No. 3104 Three Minute Sulfur Determinator

The Dietert-Detroit Sulfur Determinator used with the Varitemp or Hitemp Combustion Furnace provides the most practical means of getting results in a few minutes with accuracy equal to or better than any other method.

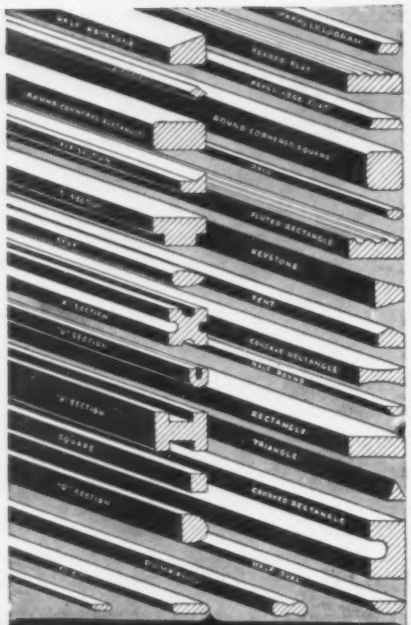
APPLICATIONS	FEATURES
Metals and Ores	Lowest First Cost
Fuel Oil and Lubricants	Simple Operation
Solid Fuels and Greases	Exact End Point
Rubber ar. J Plastics	Visible Reagents
Inorganic Sulfates	Efficient Bubbler
Organic Chemicals	Meets A.S.T.M. Spec.

Let our chemists suggest a complete ready-to-go set-up to solve your sulfur analysis problems.

CONTROL EQUIPMENT

HARRY W. DIETERT COMPANY

9330 ROSELAWN • DETROIT 4, MICH.


Shaped Wire
TO YOUR "SPECS"
High- and Low-Carbon Steel and Non-Ferrous Wire . . . shaped to your exact specifications.
CHARTER WIRE, INC.
MILWAUKEE
Phone BRoadway 6-1329
635 E. Polk Street, Milwaukee 2, Wisconsin

Over 85% of the torque wrenches used in industry are
STURTEVANT
TORQUE WRENCHES
Read by Sight, Sound or Feel.
● Permanently Accurate
● Practically Indestructible
● Faster—Easier to use
● Automatic Release
● All Capacities
in inch ounces . . . inch pounds . . . foot pounds (All Sizes from 0-6000 ft. lbs.)
STURTEVANT TORQUE MANUAL
Every manufacturer, design and production man should have this valuable data. Sent upon request.
P A STURTEVANT CO
ADDISON QUALITY ILLINOIS

Construction:

Acid-proof pour-lay cement resists corrosion.

Lower labor costs are possible with a pour-lay acid-proof cement designed for installation in construction of industrial floors, tanks, chimneys and drains subject to attack by corrosive chemicals.

In chemical plants, steel mills, plating plants and other industries where use of acids and corrosive gases have made use of costly special tile and brick necessary, the pour-lay cements helps keep construction costs down.

Recommended Uses

This new concrete known as Sauereisen No. 54, will resist all acids (except hydrofluoric) acid gases and neutral salts. It provides maximum resistance to hot or cold, strong, weak or mixed solutions of all these corrosive acids —resists water and steam without any special treatment, resists oil, electricity and temperatures to 2000°F.

It has been successfully tested in construction of floors, sewers, tanks, chimneys, sumps, linings, vats, pits, drains, foundations, towers, digesters and all similar applications where corrosive elements will be present.

Comes In Two Parts

This acid-proof concrete is supplied in two parts, a dry filler consisting of an acid-proof cement with a selected aggregate added, and a special liquid binder. The concrete is ready to use when these two parts are mixed together —four parts of dry filler to one part of liquid binder, by weight.

Mixing may be done by hand or with standard concrete mixing equipment. Nothing is added to the raw materials.

Besides being easy to use, this acid-proof concrete offers increased strength. It is definitely stronger than ordinary Portland cement mixtures, with a compressive strength of over 3300 psi as compared to 2800 psi for a rich cement mix, and 2200 lb for a standard mix.

In use, the material is poured into place and leveled off as desired. It should be brought up to grade and the surface finished immediately, because this concrete cannot be finished after the initial set has taken place.

Instruments:

Tungsten used in commercial resistance thermometer.

Successful use of tungsten in a commercial precision resistance thermometer, was described by General Electric engineers at a recent session of the American Institute of Electrical Engineers in New York.

Tungsten offers many advantages as the sensing element of a resistance thermometer, it was pointed out. Among them are its high melting point, 3380° C, and large change in resistance with temperature. It is also readily available from the manufacturers of elecric light bulbs, in the form of high purity ductile wire."

Calibration Unusual

The tungsten resistance thermometer has been calibrated and adjusted by an unique method. To accomplish this, it was necessary to develop new techniques, including a welding method which would produce low resistance, high stability connections between the tungsten and nickel lead wires.

Although the present upper temperature rating is 300° C, this is not an inherent limitation in the sensing material, and progress is already being made in increasing this temperature.

Inherent temperature limitations of the commonly used metals such as copper, platinum, nickel are well known. The best of these materials, platinum, has an upper range of approximately 600° C.

Experiments conducted with tungsten show excellent stability at temperatures up to 1000°C. Since the range is no longer limited by the inherent properties of the sensing element material, limits could be increased.

the Iron Age
FOUNDED 1855
Markets and Prices

THE IRON AGE SUMMARY...

- **Competition forces producers to cut prices**
- **Extra charges and freight costs bear brunt**
- **Steelmaking operations holding at 74.0 pct**

Competition is forcing steel producers to cut their prices some, and consumers are already benefiting at the rate of many thousands of dollars per year.

So far base prices have not been cut—except by companies that had been charging premiums. But freight absorption is mounting steadily. And cuts in extra charges are rippling through the industry. (Extra charges are for certain manufacturing operations required to meet customers' specifications.)

A seemingly isolated reduction by one producer to gain business is usually matched by all its competitors within a matter of hours. Having tasted blood in the form of cost reductions, purchasing agents are pressing for still greater price concessions from their mill suppliers. They aren't at all bashful about mentioning a lower offer they have received from another supplier. And in some cases they have even taken the initiative in attempting to negotiate additional price concessions.

Last week's reductions of $4 a ton in extras for sheets for moderate drawing requirements furnish a good example. U. S. Steel Corp. had barely announced the move to meet competition when consumers started pressuring its competitors to do likewise. Within a few hours large steel users had been assured that other suppliers would meet the lower price.

Greatest consumer pressure centered in Detroit for two reasons: (1) Not only is the auto industry steel's biggest customer, using about one-fifth of all steel produced, but auto firms are also the biggest individual buyers. (2) Drawing quality sheet is a big tonnage item in the Detroit market.

Some steel producers don't like to refer to freight absorption and reductions in extras as price cuts, but that is the effect they have. They lower the mill return, and they lower the cost of steel to consumers.

Little change in steel business is expected for at least the next several weeks. Steel sales people generally expect March business to be a little better than January or February.

A good many steel sales people feel they have passed the bottom of the inventory correction cycle. In some cases they have been notified of increased tonnage for March, and some order schedules have been advanced. The brighter outlook is attributed more to the end of inventory correction and leveling out of production than it is to any increase in manufacturing.

But consumers are reluctant to order much ahead of actual needs. In some cases they ask for delivery on shorter schedule than the mills can meet—even by special expediting. Some of the consumer reluctance to order well ahead as the mills would like can be traced to price concessions. Hoping to make the best deal possible, consumers hold off ordering to the very last minute. It does little good for producers to point to price-at-time-of-shipment clauses.

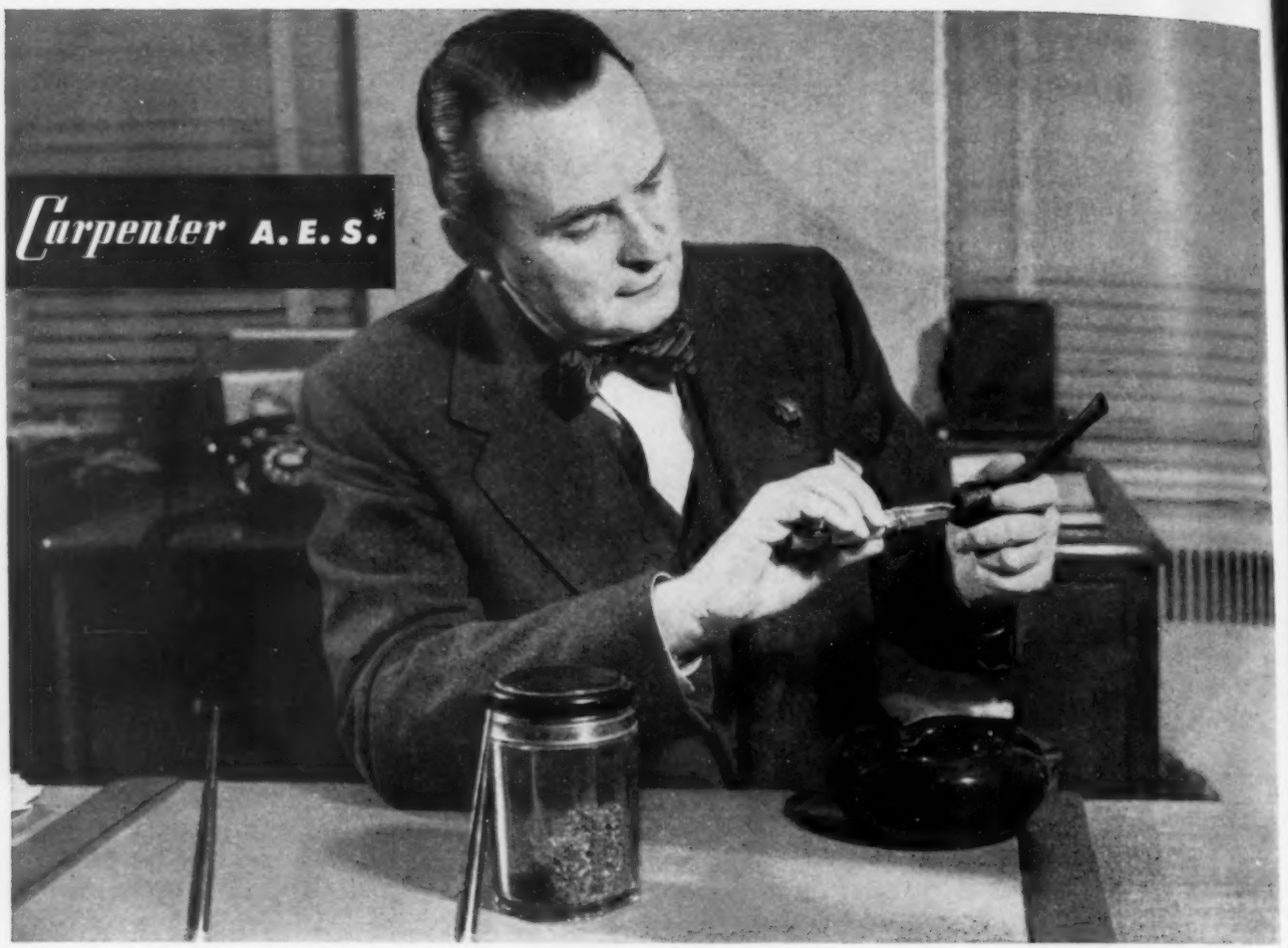
The scrap market continues in the doldrums. This week The Iron Age Steel Scrap Composite Price slipped another 66¢ a ton to $26.67 per gross ton.

Steelmaking operations this week are scheduled at 74.0 pct of rated capacity.

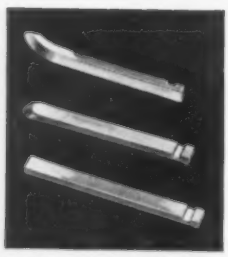
Steel Output, Operating Rates

	This Week†	Last Week	Month Ago	Year Ago
Net Tons Produced (000 omitted)	**1,764**	**1,774**	**1,772**	**2,248**
Ingot Production Index (1947—49=100)	**109.8**	**110.4**	**110.3**	**139.9**
District Operating Rates				
Pittsburgh	89.0	89.0*	88.0	105.0
Chicago	83.0	84.0	77.5	101.0
Philadelphia	76.0	78.0	80.0	97.0
Valley	71.0	70.0*	73.0	100.0
West	78.5	65.0*	74.0	106.5
Cleveland	76.0	75.0*	83.0	96.0
Buffalo	84.0	79.0	63.5	94.0
Detroit	79.0	77.0*	85.0	101.0
Birmingham	76.5	80.5	95.0	97.5
Wheeling	79.0	79.0*	85.0	102.0
S. Ohio River	73.5	74.5	84.5	90.0
St. Louis	35.7	36.5	64.0	93.5
East	31.0	73.0*	77.0	91.0
Aggregate	**74.0**	**74.0**	**75.0**	**99.0**

Per cent of capacity for weeks in 1954 is based on annual capacity of 124,330,410 net tons as of Jan. 1, 1954. Per cent of capacity for last year is based on annual capacity of 117,547,470 tons as of Jan. 1, 1953.
* Revised.
† Tentative.



Good News for Pipe Smokers



*Another example of how Carpenter *Application Engineering Service is helping industry cut costs, build sales.*

Once a good pipe is "broken in", you can look forward to many hours of smoking pleasure. That is, provided you have an easy way to keep the inside of the pipe bowl in good shape. That's the reason for this reamer type pipe cleaner. You simply insert it in the bowl, turn the expanding blades to fit, then rotate the cleaner to remove excess "cake". These cleaners now sell all over the country . . . but here's the interesting story on how the manufacturer hurdled problems in perfecting the device:

The "heart" of the cleaner is in the cutting blades. For these, the manufacturer was using cold rolled steel, chrome plated. However, plating costs were too high . . . running 7c per blade. Also, plating produced a rounded, inefficient cutting edge. And to make matters worse, one out of three plated blades had to be rejected.

At this point the manufacturer called in Carpenter and Application Engineering Service went to work. The Carpenter representative recommended a *stainless* steel, Carpenter No. 5, Type 416. Results: Plating costs are eliminated, blades take and hold sharp edges to make a vastly improved product . . . and rejects are a thing of the past.

On product after product . . . from kitchen cutlery to parts for critical instruments . . . Carpenter Application Engineering Service has helped industry find the one steel best suited to cut costs, improve performance. For A.E.S. brings to your designers, purchasing men and production heads the benefits of almost 70 years' experience in applying specialty steels. This program has been the guiding force behind improved steels and totally new steels by Carpenter to make possible the "impossible". A.E.S. goes to work for your plant as soon as you get in touch with Carpenter. THE CARPENTER STEEL COMPANY, 121 W. Bern St., Reading, Pa.

Carpenter STEEL — Tool, Alloy and Stainless Steels

Pioneering in Improved Tool, Alloy and Stainless Steels Through Continuing Research

Markets at a Glance

Wildcat Strike Ends . . . U. S. Steel's Columbia-Geneva Div. lost about 10,000 tons of ingot production because of a wildcat strike at its Geneva, Utah, works which lasted for a day and a half. All ten openhearths as well as rolling mills were idled.

Warehouse Hopes Rise . . . Steel warehouse people report business has been picking up a little. Volume is still a long way from last year's level, but outlook is better than it has been for several months. They are hopeful that their market shakeout has been completed and that sales will continue to gain. As with the mills, inventory correction has been the dominant factor in the warehouse market. But, unlike the mills, warehouse had some inventory correcting of their own to accomplish.

Meets Competition . . . U. S. Steel Corp. has established a new grade of deep drawing sheet for moderate drawing requirements, carrying an extra of $5 per ton. This compares with $9 per ton for special killed deep drawing grade for more severe drawing operations. The new grade is designed to meet more competitive conditions, the company said.

See Continued Tariff Suspension . . . Continued suspension of import duties of copper shapes up as a probability in Washington. The House Ways and Means Committee favors a 2-year extension of the existing duty-free status of imported copper. Extension period may be trimmed to 1 year before the bill is finally passed. Unless Congress passes some sort of extension legislation, the present exemption status will come to an end as of June 30.

RFC Sells Ore Holdings . . . Reconstruction Finance Corp. has sold its holdings of $4.3 million principal amount of first mortgage bonds of Steep Rock Iron Mines, Ltd., to Dominion Securities Corp., Ltd., and A. E. Ames & Co., Ltd., both of Toronto, Canada.

Near Record TV Output . . . Production of 7,214,787 television sets during 1953 was the second highest in the industry's history running close to record 1950 output of 7,463,800 sets, reports Radio-Electronics-Television Manufacturers Assn. Radio production last year was estimated at 13,368,556.

Nobody Wants Seconds . . . Not too many months ago there was a thriving business in off quality steel. Not so today. Last week a Midwest mill is reported to have returned a quantity of cold-rolled sheets to the furnace—because they weren't up to snuff. Secondary distributors who would have snatched this material in a hurry 6 months ago wouldn't touch it with a 10-ft pole.

January Business Almost the Best . . . Reversing the trend in many industries, Fruehauf Trailer Co. reports new orders for civilian trailers in January were the greatest the company has ever received in one month, with the exception of February, 1951.

Little Change in Consumer Prices . . . National Industrial Conference Board's Consumers' Price Index dipped 0.2 pct from November to December.

Expect Good Year . . . Dollar volume of shipments of electrical equipment in 1953 hit an all-time high of $15.5 billion. This is a 7 pct gain over 1952, says National Electrical Manufacturers Assn. Prediction for '54 is that shipment volume will ease off only 3-5 pct.

Picking Up . . . After a three-week leveling-off period, business in the Pittsburgh district turned upward in the week ended Jan. 30. University of Pittsburgh's Bureau of Business Research says nearly all major lines of industry participated in the moderate rise. The index of business stood at 173.0 pct of the 1935-39 average compared with 172.5 pct a month earlier.

Prices At A Glance

(cents per lb unless otherwise noted)

	This Week	Week Ago	Month Ago	Year Ago
Composite prices				
Finished Steel, base	4.634	4.634	4.634	4.376
Pig Iron (gross ton)	$56.59	$56.59	$56.59	$55.26
Scrap, No. 1 hvy. (gross ton)	$26.67	$27.33	$28.83	$42.00
Nonferrous metals				
Aluminum, ingot	21.50	21.50	21.50	20.50
Copper, electrolytic	29.75	29.75	29.75	24.50
Lead, St. Louis	12.80	12.80	13.30	13.30
Magnesium, ingot	27.75	27.75	27.75	24.50
Nickel, electrolytic	63.08	63.08	63.08	63.08
Tin, Straits, N. Y.	85.25	85.00	84.50	$1.21½
Zinc, E. St. Louis	9.50	9.50	10.00	11.50

Slash Titanium Sheet, Plate Extras

First significant cut since mill prices were established averages 12 pct on sheet, plate . . . Base prices unchanged . . . Volume, continuous mills cited—*By R. L. Hatschek.*

Trimming of titanium sheet and plate extras today is the first significant price reduction in the "new" metal since mill prices were first established in 1950. Titanium Metals Corp. of America states that rapidly expanding production and continuous rolling of titanium sheet forced costs downward.

The cut, averaging more than 12 pct, is being extended to all customers. New sheet and plate orders are being priced on the lowered schedule and some $2 million worth of orders already on the books is being repriced downward.

Base prices remain as previously quoted. Here is the new extra list as it applies to commercially pure (Ti-75A) and Ti-100A titanium sheets:

THICKNESS AND WIDTH

Thickness (In.)	Width (In.)	Extra (Per Lb)
0.012 to 0.015	24 to 36	$6.75
Over 0.015 to 0.020	24 to 36	4.50
	Over 36 to 42	5.75
Over 0.020 to 0.025	24 to 36	3.50
	Over 36 to 42	4.50
	Over 42 to 48	5.50
Over 0.025 to 0.032	24 to 36	2.75
	Over 36 to 42	3.75
	Over 42 to 48	4.75
Over 0.032 to 0.040	24 to 36	2.25
	Over 36 to 42	3.25
	Over 42 to 48	4.25
Over 0.040 to 0.060	24 to 36	1.75
	Over 36 to 42	2.75
	Over 42 to 48	3.75
Over 0.060 to 0.125	24 to 36	1.25
	Over 36 to 42	2.00
	Over 42 to 48	2.50
Over 0.125 to 0.187	24 to 36	0.75
	Over 36 to 42	1.50
	Over 42 to 48	2.00

SHEARING (Narrower than 24 in.)

Size (In.)	Extra (Per Lb)
Under 24 to 6	$0.50
Under 6 to 3	0.75
Under 3 to 1	1.00

LENGTH

Ordering Length (In.)	Extra (Per Lb)
Up to 96	Base
Over 96 to 120	$0.50
Over 120 to 132	1.00
Over 132	2.00

QUANTITY

Weight (Lb)	Extra (Per Lb)
10,000 and over	Base
5,000 to 9,999	$0.50
1,000 to 4,999	1.00
500 to 999	1.50
100 to 499	2.00
1 to 99	3.00

CIRCLES

Add 40 pct to price after all extras have been applied. Quantity extras based on rectangular weight of circle diam.

ALUMINUM SHIPMENTS

(net tons)

	Dec.	Nov.
Sheet & Plate, total	39,396	39,125*
Non-Heat-Treatable	27,120	27,396*
Heat Treatable	12,276	11,729
Foil	4,961	4,743
Extruded Products, total	9,962	10,360
Soft Alloys	7,006	7,852
Hard Alloys	2,956	2,508
Castings, total	11,816	11,232
Sand	1,243	1,418
Permanent Mold	5,131	4,612
Tube, Drawn & Welded		
Die	5,442	5,202
Total	1,986	2,067
Soft Alloys	1,047	1,552
Hard Alloys	439	510
Rod & Bar, Rolled & Drawn	5,061	5,652
Wire, Bare, Not Conductor	1,123	1,383
Electric Conductor (Aluminum Content)	1,947	2,472
Forgings	2,030	2,083

* Rivised.

Aluminum Output Jumps . . . December production of primary aluminum totaled 110,291 tons, less than 300 tons short of the all-time record established in August. More than 4000 tons better than November, it brought the total for the year to 1,252,015 tons.

And a new capacity is still coming in. Reynolds Metals Co., for instance, has just started up operations at its brand new Patterson plant in Arkadelphia, Ark.

It now seems that decision on further aluminum expansion won't be made before late May, if then. Armed forces have been ordered to reappraise their aircraft needs as a result of a spot check which showed too many "undetermined factors."

Shipments Dip . . . Shipments of aluminum mill products in December held at about the November rate, according to Aluminum Assn. statistics. But this level was a considerable drop from October, reflecting generally lighter demand than earlier last year.

On the secondary side of the picture aluminum ingot prices were trimmed last week anywhere from ¼¢ to 1½¢ per lb.

Brass, Bronze Off . . . Light demand also forced ingot makers to cut a uniform 1¢ per lb from secondary brass and bronze ingot prices. Some surprise was noted since they had only recently increased scrap buying prices and have made no moves to reduce costs in this direction. But the previous ingot prices had been in effect since last July and the market has definitely shifted.

Zinc Stocks Up Again . . . Smelter stocks of slab zinc seem to be approaching the 200,000-ton level despite cutbacks in production. At the beginning of this month, smelters had 198,792 tons on hand—highest total since 1946.

Output in January dipped slightly to 78,561 tons while deliveries dropped over 3000 tons to 60,612 tons. Unfilled orders declined about 9000 tons, standing at 26,378 tons on Feb. 1.

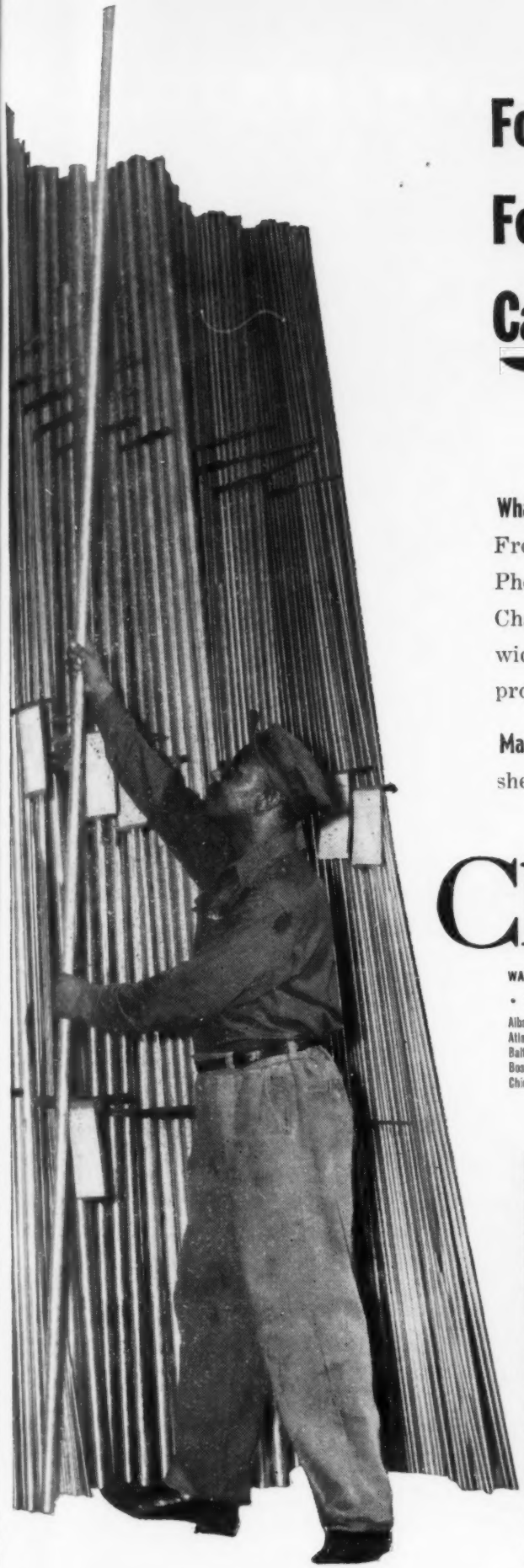
NONFERROUS METAL PRICES

(Cents per lb except as noted)

	Feb. 3	Feb. 4	Feb. 5	Feb. 6	Feb. 8	Feb. 9
Copper, electro, Conn.	29.50–30.00	29.50–30.00	29.50–30.00	29.50–30.00	29.50–30.00	29.50–30.00
Copper, Lake delivered	30.00	30.00	30.00	30.00	30.00	30.00
Tin, Straits, New York	85.00	85.00	85.25	....	85.25	85.25*
Zinc, East St. Louis	9.50	9.50	9.50	9.50	9.50	9.50
Lead, St. Louis	12.80	12.80	12.80	12.80	12.80	12.80

Note: Quotations are going prices

*Tentative



For copper in any form — For top-notch service — Call Chase

What kind of copper or copper alloy do you need? Free-cutting brass rod? Sheet and strip brass? Phosphor bronze for springs? Call your nearby Chase warehouse. We can supply you with the widest variety of brass or copper materials for production, maintenance or repair.

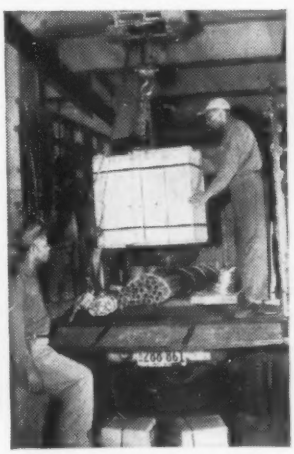
Many of our branches are equipped to slit, saw, or shear our metals or your own stocks to specifications.

Chase® BRASS & COPPER

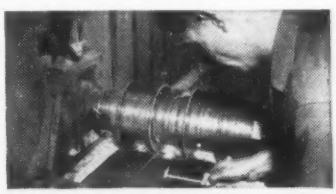
WATERBURY 20, CONNECTICUT • SUBSIDIARY OF KENNECOTT COPPER CORPORATION

• *The Nation's Headquarters for Brass & Copper*

Albany†	Cincinnati	Houston	Minneapolis	Pittsburgh	Seattle
Atlanta	Cleveland	Indianapolis	Newark	Providence	Waterbury
Baltimore	Dallas	Kansas City, Mo.	New Orleans	Rochester†	
Boston	Denver†	Los Angeles	New York	St. Louis	(†sales office only)
Chicago	Detroit	Milwaukee	Philadelphia	San Francisco	



Deliveries to your factory by truck, rail or express, if desired.



Close tolerance sawing, slitting, shearing to your specifications.

Stocks of tube, rod, bar, strip, sheet and wire in a variety of alloys.

Nonferrous Prices

(Effective Feb. 9, 1954)

MILL PRODUCTS

(Cents per lb, unless otherwise noted)

Aluminum

(Base 30,000 lb, f.o.b. ship. pt. frt. allowed)

Flat Sheet: 0.136 in. and thicker, 2S, 3S, 33.9¢; 4S, 36.0¢; 52S, 38.2¢; 24S-O, 24S-OAL, 37.0¢; 75S-O, 75S-OAL, 44.7¢; 0.081-in., 2S, 3S, 35.1¢; 4S, 37.7¢; 52S, 39.9¢; 24S-O, 24S-OAL, 38.4¢; 75S-O, 75S-OAL, 46.9¢. 0.032-in., 2S, 3S, 37.0¢; 4S, 41.8¢; 24S-O, 24S-OAL, 46.9¢; 75S-O, 75S-OAL, 58.4¢.

Plate, ¼-in. and Heavier: 2S-F, 3S-F, 32.4¢; 4S-F, 34.5¢; 52S-F, 36.2¢; 61S-O, 35.6¢; 24S-O, 24S-OAL, 36.9¢; 75S-O, 75S-OAL, 44.3¢.

Extruded Solid Shapes: Shape factors 1 to 5, 36.5¢ to 82.8¢; 12 to 14, 37.2¢ to 99.0¢; 24 to 26, 39.9¢ to $1.29; 36 to 38, 47.2¢ to $1.89.

Rod, Rolled: 1.064 to 4.5-in., 2S-F, 3S-F, 43.8¢ to 37.2¢; cold-finished, 0.375 to 3.499-in., 2S-F, 3S-F, 47.6¢ to 39.3¢.

Screw Machine Stock: Rounds, 11S-T3, ½ to 11/32-in., 59.6¢ to 47.0¢; ⅜ to 1½-in., 46.6¢ to 43.8¢; 1 9/16 to 3-in., 42.7¢ to 39.9¢. Base 5000 lb.

Drawn Wire: Coiled 0.051 to 0.374-in., 2S, 44.1¢ to 32.4¢; 52S, 53.4¢ to 39.1¢; 17S-T4, 60.1¢ to 41.8¢; 61S-T4, 53.9¢ to 41.3¢.

Extruded Tubing: Rounds, 63S-T5, OD 1¼ to 2-in., 31.6¢ to 60.7¢; 2 to 4 in., 37.7¢ to 51.1¢; 4 to 6 in., 38.2¢ to 46.6¢; 6 to 9 in., 38.7¢ to 48.8¢.

Roofing Sheet: Flat, per sheet, 0.032-in., 42¾ x 60 in., $2.838; x 96 in., $4.543; x 120 in., $5.680; x 144 in., $6.816. Coiled sheet, per lb, 0.019 in. x 28 in.

Magnesium

(F.o.b. mill, freight allowed)

Sheet and plate: FS1-O¼ in., 66¢; 3/16 in., 68¢; ½ in., 70¢; B & S Gage 10, 71¢; 12, 75¢. Specifications grade higher. Base: 30,000 lb.

Extruded Round Rod: M, diam ¼ to 0.311 in., 77¢; ½ to ¾ in., 60.5¢; 1¼ to 1.749 in., 56¢; 2½ to 5 in., 51.5¢. Other alloys higher. Base up to ¾ in. diam, 10,000 lb; ¾ to 2 in., 20,000 lb; 2 in. and larger, 30,000 lb.

Extruded Solid Shapes: Rectangles: M. In weight per ft, for perimeters less than size indicated; 0.10 to 0.11 lb, 3.5 in., 65.3¢; 0.22 to 0.25 lb, 5.9 in., 62.3¢; 0.50 to 0.59 lb, 8.6 in., 59.7¢; 1.8 to 2.59 lb, 19.5 in., 56.8¢; 4 to 6 lb, 28 in., 52¢. Other alloys higher. Base, in weight per ft of shape: Up to ½ lb, 10,000 lb; ½ to 1.80 lb, 20,000 lb; 1.80 lb and heavier, 30,000 lb.

Extruded Round Tubing: M, 0.049 to 0.057 in. wall thickness: OD, ¼ to 5/16 in., $1.43; 5/16 to ⅜ in., $1.29; ½ to ⅝ in., 96¢; 1 to 2 in., 79¢; 0.165 to 0.219 in. wall; OD, ⅝ to ¾ in., 64¢; 1 to 2 in., 60¢; 3 to 4 in., 59¢. Other alloys higher. Base, OD: Up to 1½ in., 10,000 lb; 1½ to 3 in., 20,000 lb; over 3 in., 30,000 lb.

Titanium

(10,000 lb base, f.o.b. mill)

Commercially pure and alloy grades; Sheets and strip, HR or CR, $15; Plate, HR, $12; Wire, rolled and/or drawn, $10; Bar, HR or forged, $6; Forgings, $6.

Nickel, Monel, Inconel

(Base prices, f.o.b. mill)

	"A" Nickel	Monel	Inconel
Sheet, CR	86½	67½	92½
Strip, CR	92½	70½	98½
Rod, bar	82½	65½	88½
Angles, HR	82½	65½	88½
Plate, HR	84½	66½	90½
Seamless Tube	115½	100½	137½
Shot, blocks	....	60	....

Copper, Brass, Bronze

(Freight included on 500 lb)

	Sheet	Rods	Extruded Shapes
Copper	46.41	....	48.48
Copper, h-r	48.38	44.73	....
Copper, drawn	....	45.98	....
Low brass	44.47	44.41	....
Yellow brass	4.172	41.66	....
Red brass	45.44	45.38	....
Naval brass	45.76	40.07	41.33
Leaded brass	....	....	39.11
Com. bronze	46.95	46.89	....
Mang. bronze	49.48	43.62	45.18
Phos. bronze	66.58	67.08	....
Muntz metal	43.96	39.77	41.02
Ni silver, 10 pct	55.36	....	62.63

PRIMARY METALS

(Cents per lb, unless otherwise noted)

Aluminum ingot, 99+%, 10,000 lb, freight allowed	21.50
Aluminum pig	20.00
Antimony, American, Laredo, Tex.	28.50
Beryllium copper, per lb conta'd Be	$40.00
Beryllium aluminum 5% Be, Dollars per lb contained Be	$72.75
Bismuth, ton lots	$2.25
Cadmium, del'd	$1.70
Cobalt, 97-99% (per lb)	$2.60 to $2.67
Copper, electro, Conn. Valley	29.50 to 30.00
Copper, Lake, delivered	30.00
Gold, U. S. Treas., dollars per oz.	$35.00
Indium, 99.8%, dollars per troy oz.	$2.25
Iridium, dollars per troy oz.	$165 to $175
Lead, St. Louis	12.80
Lead, New York	13.00
Magnesium, 99.8+%, f.o.b. Freeport, Tex., 10,000 lb, pig	27.00
Ingot	27.75
Magnesium, sticks, 100 to 500 lb.	46.00 to 48.00
Mercury, dollars per 76-lb flask, f.o.b. New York	$187 to $190
Nickel electro, f.o.b. N. Y. warehouse	63.08
Nickel oxide sinter, at Copper Creek, Ont., contained nickel	56.25
Paladium, dollars per troy oz.	$22 to $24
Platinum, dollars per troy oz.	$90 to $92
Silver, New York, cents per oz	85.25
Tin, New York	85.25
Titanium, sponge	$5.00
Zinc, East St. Louis	9.50
Zinc, New York	10.00
Zirconium copper, 50 pct	$6.20

REMELTED METALS

Brass Ingot

(Cents per lb delivered carloads)

85-5-5-5 ingot	
No. 115	23.50
No. 120	22.75
No. 123	22.25
80-10-10 ingot	
No. 305	27.75
No. 315	25.50
88-10-2 ingot	
No. 210	36.50
No. 215	33.00
No. 245	28.50
Yellow ingot	
No. 405	19.75
Manganese bronze	
No. 421	24.25

Aluminum Ingot

(Cents per lb del'd 30,000 lb and over)

95-5 aluminum-silicon alloys	
0.30 copper, max.	22.00-22.25
0.60 copper, max.	21.75-22.00
Piston alloys (No. 122 type)	18.75-19.50
No. 12 alum. (No. 2 grade)	18.25-19.00
108 alloy	19.00-19.50
195 alloy	20.50-21.00
13 alloy (0.60 copper max.)	21.75-22.00
ASX-679	19.00-19.50

Steel deoxidizing aluminum, notch-bar granulated or shot

Grade 1—96-97½%	19.50-20.00
Grade 2—92-95%	18.00-19.00
Grade 3—90-92%	17.00-17.50
Grade 4—85-90%	15.50-16.50

ELECTROPLATING SUPPLIES

Anodes

(Cents per lb, freight allowed, 5000 lb lots)

Copper	
Cast, oval, 15 in. or longer	44.54
Electrodeposited	38.38
Flat rolled	47.14
Brass, 80-20	
Cast, oval, 15 in. or longer	43.515
Zinc, flat cast	20.25
Ball, anodes	18.50
Nickel, 99 pct plus	
Cast	84.00
Cadmium	$1.75
Silver 999 fine, rolled, 100 oz. lots, per troy oz, f.o.b. Bridgeport, Conn.	94⅛

Chemicals

(Cents per lb, f.o.b. shipping points)

Copper cyanide, 100 lb drum	63.90
Copper sulfate, 99.5 crystals, bbl.	12.85
Nickel salts, single or double, 4-100 lb bags, frt. allowed	30.00
Nickel chloride, 375 lb drum	38.00
Silver cyanide, 100 oz. lots, per oz.	75½
Sodium cyanide, 96 pct domestic 200 lb drums	19.25
Zinc cyanide, 100 lb drum	54.30

SCRAP METALS

Brass Mill Scrap

(Cents per pound, add 1¢ per lb for shipments of 20,000 lb and over)

	Heavy	Turnings
Copper	26	25¼
Yellow brass	19¾	18
Red brass	23	22¼
Comm. bronze	23⅞	23¼
Mang. bronze	18¼	17½
Yellow brass rod ends	19½	....

Custom Smelters' Scrap

(Cents per pound carload lots, delivered to refinery)

No. 1 copper wire	24
No. 2 copper wire	22½
Light copper	21
*Refinery brass	20

*Dry copper content.

Ingot Makers' Scrap

(Cents per pound carload lots, delivered to refinery)

No. 1 copper wire	24½
No. 2 copper wire	23
Light copper	21½
No. 1 composition	17½—18
No. 1 comp. turnings	17
Rolled brass	14½—15½
Brass pipe	15 —16
Radiators	13½
Aluminum	
Mixed old cast	10 —11
Mixed new clips	11½—12
Mixed turnings, dry	10¾—11¼
Pots and pans	10 —11

Dealers' Scrap

(Dealers' buying price, f.o.b. New York in cents per pound)

Copper and Brass

No. 1 heavy copper and wire	22½
No. 2 heavy copper and wire	20½
Light copper	18½
New type shell cuttings	18 —18½
Auto radiators (unsweated)	11 —11¼
No. 1 composition	15½—16
No. 1 composition turnings	15 —15½
Unlined red car boxes	13 —13½
Cocks and faucets	13 —13½
Mixed heavy yellow brass	9½—10
Old rolled brass	12½—13
Brass pipe	14½—15
New soft brass clippings	15½—16
Brass rod ends	13 —13½
No. 1 brass rod turnings	10½—11

Aluminum

Alum. pistons and struts	5 — 6
Aluminum crankcases	8 — 9
2S aluminum clippings	11 —11½
Old sheet and utensils	8 — 9
Borings and turnings	5 — 6
Misc. cast aluminum	8 — 9
Dural clips (24S)	9 —10

Zinc

New zinc clippings	4½
Old zinc	3½
Zinc routings	1½
Old die cast scrap	3 — 3½

Nickel and Monel

Pure nickel clippings	60 —65
Clean nickel turnings	40
Nickel anodes	60 —65
Nickel rod ends	60 —65
New Monel clippings	22 —24
Clean Monel turnings	14 —15
Old sheet Monel	20 —22
Nickel silver clippings, mixed	14
Nickel silver turnings, mixed	12

Lead

Soft, scrap, lead	9½— 9¾
Battery plates (dry)	5¼— 5½
Batteries, acid free	3¼

Magnesium

Segregated solids	20 —21
Castings	19 —20

Miscellaneous

Block tin	65 —67
No. 1 pewter	40 —42
No. 1 auto babbitt	37 —38
Mixed common babbitt	11 —12
Solder joints	14
Siphon tops	35
Small foundry type	14½
Monotype	12
Lino. and stereotype	10½
Electrotype	7½
Hand picked type shells	4½
Lino. and stereo. dross	3
Electro dross	

Our NEW RareMeT Compound

is Now TWICE as Heavy

Years of experience with rare earth materials, constant research and application of our product assure you of the best results.

Our new RareMeT Compound is evidence of our progress. Now the new RareMeT Compound is twice as heavy, requires less handling and provides more uniform results.

Hot workability in many types of steels is being improved with small additions of this already established product. For example, in stainless steel, excellent results in both hot workability and increased yield have been obtained, as published in MCA's current literature and the trade magazines.

As recognized authorities in the application of Molybdenum, Tungsten, Boron, Cerium and its derivatives both as alloys and chemicals, MCA assures confidential and immediate response to inquiries.

Write today for free Progress Report Number 1, "Rare Earths in Melting."

MOLYBDENUM

CORPORATION OF AMERICA

Grant Building **Pittsburgh 19, Pa.**

Offices: Pittsburgh, Chicago, Detroit, Los Angeles, New York, San Francisco
Sales Representatives: Edgar L. Fink, Detroit; Brumley-Donaldson Co., Los Angeles, San Francisco
Subsidiary: Cleveland Tungsten, Inc., Cleveland *Plants:* Washington, Pa., York, Pa.

MCA

Steelmaking Grades Continue Slide

Trade compares present to 1949 . . . Prices drop further in most major steelmaking centers . . . Composite hits $26.67 . . . Cast continues to move fairly well.

Scrap traders this week were comparing the present market with bleak days of 1949 when prices plummetted from over $40 to under $20 in 6 months. One broker called those days better—because then he could at least sell some material which is certainly not the case today.

In general, no sales have been on very heavy tonnages and the price trend continued downward on steelmaking and blast furnace scrap in most of the major scrap trading centers. THE IRON AGE Steel Scrap Composite slipped another 66¢ to $26.67, the lowest point since early in 1950.

As to the future, nobody knows when the mills will come back into the market heavily. Stockpiles are healthy and the ingot rate is sticking fairly close to 75 pct. Some buyers are pressing for even lower prices—and with gloom as black as it is, they may well be able to buy for less if they continue to stay out of the market.

Scrap is piling up dealers' yards and despite the absence of any major purchases, the mills still have record high scrap inventories in some areas. Industrial scrap is apparently filling most of the mills' requirements.

Pittsburgh—Prices slipped off again this week as consumer disinterest prompted bargain offers in an effort to stimulate activity. No. 1 heavy melting steel dropped $1 per ton to $29, top. An independent mill is reported pressing for still lower prices. Dealers and brokers hope they are right in believing that the market has touched bottom. But in the same breath they admit guessing wrong before. Shoveling turnings dropped $1 per ton.

Chicago—With an absence of movement of dealer scrap, the market continued sluggish. A few reports indicated that at least in some railroad grades the market may be levelling and the same may be true for industrial steelmaking grades. Turnings continued their downward movement, and electric furnace continued ailing. Price changes were relatively few in an absence of any heavy buying. It was noticeable that in a few grades of cast slightly higher prices were being reported on small sales. Dealers are still over a barrel, with only premium electric furnace and industrial steelmaking and turning grades moving in anything over a trickle.

Philadelphia—A local mill came into the market for No. 1 and No. 2 steel and No. 2 bundles at $1 per ton under the previous quotation. Small sales of low phos 2 ft and under brought the whole electric furnace list down $1. And general weakness in turnings led to a slip in blast furnace grades of $1 to $2. By comparison, cast grades are firm and prices remain at earlier levels.

New York—Scrap trade here has dipped to a new low of despair, with one broker saying it's even worse than the Thirties. Steel and blast furnace scrap just is not moving and quotations continue nominally at last week's levels. Cast grades are holding steady and are the only items moving.

Detroit—A major broker here declared flatly that he knew of no market for dealer scrap at this time. As a result, scrap is piling up in yards with turnings in particular taking a beating from the market. Mill inventories are at record levels with industrial scrap apparently filling requirements. Another $1 drop almost across the board reflects the market sentiment rather than specific sales.

Cleveland—Prices here and in the Valley slipped another dollar across the board as scrap men saw no improvement in the market. Only token tonnages of industrial scrap are moving while some brokers and dealers predict a drop to 1949 price levels. Others are hoping March buying will reverse the current downward trend.

Birmingham — Steel mill production cutbacks and comfortable stockpiles are keeping the movement of scrap in the South at a minimum. One mill returned to the market this week and brokers expect another to buy next week.

St. Louis—The scrap market continues in the doldrums, with prices nominal and unchanged. The ingot rate dropped again to 35.7 pct. Because low prices have halted collections, receipts are estimated to have declined as much as 60 pct within the last 60 days. Brokers say higher prices are needed to bring cut material.

Cincinnati—Market in this area remained unchanged following last week's limited buying. Although February prices met early resistance, orders are now being covered with little difficulty.

Buffalo — Although scrap prices were nominally unchanged, the trade was a bit confused when GM's Chevrolet Div. sold 1500 tons of short shovelling turnings at around $21 per ton, about $5 above the going price. The sale was referred to as something special as the turnings were of superior quality. It was not considered a representative sale, and consumers continued to bid within prevailing price ranges.

Boston—A little business is being done in No. 2 steel for local delivery and a very little turnover in No. 1 steel pushed the price down to $14 to $15. Lack of demand has forced the price of electric furnace material down to the level of No. 1 heavy. Shoveling turnings and unstripped motor blocks were also dropped.

West Coast—Increasing availability of pig is indicated by the continued weakening of the market for cupola cast, especially in southern California, where only a few sales are being made at $38 per ton. Steelmaking grades continue weak with shipments moving out of Los Angeles and Oakland bound for Japan.

Do you *MAKE* or do you *BUY* uncomplicated, plain-finished *steel stampings* of any kind?

If you ***make*** such stampings, Reliance ***ECON-O-GRADE*** sheets can help you reduce your steel costs.

If you ***buy*** them, pass the suggestion along to your supplier. Any saving he makes may mean a saving for you.

Where do these savings come in? Just this—***ECON-O-GRADE*** sheets cost us less than Reliance COMMERCIAL-OR-BETTER QUALITY sheets, so you pay less for them.

Whichever grade you buy, the steel must meet the functional requirements of the job for which it is intended. That means in finish, gauge, size and workability. It's strictly a matter of *job-fitting*.

And, your stampings need not be *too* "uncomplicated" either! You will find Reliance ***ECON-O-GRADE*** sheets suitable for most ordinary stamping operations like bending, forming and drawing.

Available in Cold Rolled and Hot Rolled Pickled finishes; in sheets, or sheared or slit to your working sizes.

Ask a Reliance "Dan" for more information about ***ECON-O-GRADE*** sheets. Go over your jobs with him. He'll explain the cost-saving possibilities.

REG. U.S. PAT. OFF.
DEPENDABLE DAN will take care of it for you!

Here's the gist of the Reliance JOB-FITTING idea—

. . . It's knowing our "stuff" . . . our "feel for steel."
. . . It's knowing your job . . . what you expect the steel to do for you.
. . . It's supplying in-stock sheet and strip best suited to your immediate need.

FOR HELPFUL ACTION CALL OUR NEAREST PLANT OR OFFICE

RELIANCE STEEL DIVISION

Processors and Distributors JOB-FITTED Sheet and Strip Steel

GENERAL OFFICES — BOX 4308 — PORTER STATION, DETROIT 9, MICHIGAN

PLANTS

CLEVELAND PLANT, 3344 E. 80th St., VUlcan 3-3600, Cleveland 27, O.
DETROIT PLANT, 13770 Joy Road, WEbster 3-5866, Detroit 28, Mich.
EASTERN PLANT, 2061 State Street, STate 7-5781, Hamden (New Haven 7), Conn.
MIDWEST PLANT, 1601 South Wolcott Ave., CAnal 6-2442, Chicago 8, Ill.

OFFICES

COLUMBUS 12, OHIO, 1373 Grandview Ave., Kingswood 6264
DAYTON, OHIO, 120 W. Second Street, Michigan 3581
DES MOINES 9, IOWA, 610 Fleming Bldg., Des Moines 2-1480
DETROIT 28, MICHIGAN, 13770 Joy Road, WEbster 3-5966
GRAND RAPIDS 2, MICH., 326 Keeler Bldg., GLendale 6-9569
INDIANAPOLIS 4, IND., 1509 Fletcher Trust Bldg., FRanklin 2333
JACKSON 18, MICHIGAN, 801 Reynolds Bldg., Jackson 4-6189
MILWAUKEE 10, WIS., 4622 W. Center St., Hilltop 2-1040
NEW YORK 19, N. Y., 250 West 57th St., COlumbus 5-4870
ROCHESTER 4, N. Y., 5 St. Paul St., BAker 1051
ST. LOUIS 8, MO., 4378 Lindell Blvd., LUcas 4550
TOLEDO 4, OHIO, 2114 Ohio Bldg., GArfield 8384
WORCESTER 8, MASS., 507 Main St., Worcester 5-8686

RELIANCE *Job-Fitted* PRODUCTS

COLD ROLLED STEEL STRIP — COILS — CUT LENGTHS — ALL TEMPERS
SHEETS: COLD ROLLED — HOT ROLLED — H. R. PICKLED — LONG TERNE — GALVANIZED
Standard and Production Sizes or Cut to Actual Working Dimensions

DETROIT D S C STEEL

PRODUCERS OF
Coke • Coal Chemicals • Pig Iron • Ingots
Slabs • Sheet Bars • Billets • Wire Rods
Hot Rolled and Cold Rolled Sheet and Strip
Low and Medium Carbon Manufacturers' Wire
High Carbon Specialty Wire • Welded Fabric

GENERAL OFFICES
DETROIT 9, MICHIGAN

Copyright 1954 D.S.C.

Scrap Prices

(Effective Feb. 9, 1954)

Pittsburgh

No. 1 hvy. melting	$28.00 to $29.00
No. 2 hvy. melting	25.00 to 26.00
No. 1 bundles	28.00 to 29.00
No. 2 bundles	23.00 to 24.00
Machine shop turn.	13.00 to 14.00
Mixed bor. and ms. turns.	13.00 to 14.00
Shoveling turnings	17.00 to 18.00
Cast iron borings	17.00 to 18.00
Low phos. punch'gs, plate	31.00 to 32.00
Heavy turnings	25.00 to 26.00
No. 1 RR. hvy. melting	30.00 to 31.00
Scrap rails, random lgth.	38.00 to 39.00
Rails 2 ft and under	44.00 to 45.00
RR. steel wheels	32.00 to 33.00
RR. spring steel	32.00 to 33.00
RR. couplers and knuckles	32.00 to 33.00
No. 1 machinery cast.	42.00 to 43.00
Cupola cast.	35.00 to 36.00
Heavy breakable cast.	30.00 to 31.00
Malleable	31.00 to 32.00

Chicago

No. 1 hvy. melting	$25.00 to $27.00
No. 2 hvy. melting	20.00 to 22.00
No. 1 factory bundles	27.00 to 29.00
No. 1 dealers' bundles	24.00 to 26.00
No. 2 dealers' bundles	19.00 to 21.00
Machine shop turn.	9.00 to 10.00
Mixed bor. and turn.	9.00 to 10.00
Shoveling turnings	11.00 to 12.00
Cast iron borings	11.00 to 12.00
Low phos. forge crops	32.00 to 33.00
Low phos. punch'gs, plate	29.00 to 31.00
Low phos. 3 ft and under	28.00 to 29.00
No. 1 RR. hvy. melting	28.00 to 29.00
Scrap rails, random lgth.	30.00 to 31.00
Rerolling rails	36.00 to 37.00
Rails 2 ft and under	38.00 to 40.00
Locomotive tires, cut	32.00 to 34.00
Cut bolsters & side frames	32.00 to 33.00
Angles and splice bars	34.00 to 35.00
RR. steel car axles	37.00 to 38.00
RR. couplers and knuckles	32.00 to 34.00
No. 1 machinery cast.	33.00 to 35.00
Cupola cast.	30.00 to 31.00
Heavy breakable cast.	25.00 to 26.00
Cast iron brake shoes	32.00 to 33.00
Cast iron car wheels	29.00 to 31.00
Malleable	36.00 to 37.00
Stove plate	24.00 to 26.00

Philadelphia Area

No. 1 hvy. melting	$25.00 to $26.00
No. 2 hvy. melting	22.00 to 23.00
No. 1 bundles	25.00 to 26.00
No. 2 bundles	20.00 to 21.00
Machine shop turn.	13.00 to 14.00
Mixed bor. short turn.	15.00 to 16.00
Cast iron borings	15.00 to 16.00
Shoveling turnings	19.00 to 20.00
Clean cast chem. borings.	24.00 to 25.00
Low phos. 5 ft and under	29.00 to 30.00
Low phos. 2 ft and under	30.00 to 31.00
Low phos. punch'gs	30.00 to 31.00
Elec. furnace bundles	27.00 to 28.00
Heavy turnings	23.00 to 24.00
RR. steel wheels	32.00 to 33.00
RR. spring steel	32.00 to 33.00
Rails 18 in. and under	40.00 to 41.00
Cupola cast.	34.00 to 35.00
Heavy breakable cast.	35.50 to 37.50
Cast iron carwheels	38.00 to 39.00
Malleable	39.00 to 40.00
Unstripped motor blocks.	27.00 to 28.00
No. 1 machinery cast.	38.00 to 40.00
Charging box cast.	35.00 to 36.00

Cleveland

No. 1 hvy. melting	$26.00 to $27.00
No. 2 hvy. melting	23.00 to 24.00
No. 1 bundles	26.00 to 27.00
No. 2 bundles	21.00 to 22.00
No. 1 busheling	26.00 to 27.00
Machine shop turn.	11.00 to 12.00
Mixed bor. and turn.	15.00 to 16.00
Shoveling turnings	15.00 to 16.00
Cast iron borings	15.00 to 16.00
Low phos. 2 ft and under	29.00 to 30.00
Drop forge flashings	26.00 to 27.00
No. 1 RR. heavy melting	29.00 to 30.00
Rails 3 ft and under	41.00 to 42.00
Rails 18 in. and under	43.00 to 44.00
Railroad grate bars	27.00 to 28.00
Steel axle turnings	24.00 to 25.00
Railroad cast.	40.00 to 41.00
No. 1 machinery cast.	41.00 to 42.00
Stove plate	35.00 to 36.00
Malleable	41.00 to 42.00

Iron and Steel Scrap

Going prices of iron and steel scrap as obtained in the trade by THE IRON AGE based on representative tonnages. All prices are per gross ton delivered to consumer unless otherwise noted.

Youngstown

No. 1 hvy. melting	$28.00 to $29.00
No. 2 hvy. melting	26.00 to 27.00
No. 1 bundles	28.00 to 29.00
No. 2 bundles	24.00 to 25.00
Machine shop turn.	14.00 to 15.00
Shoveling turnings	18.00 to 19.00
Cast iron borings	18.00 to 19.00
Low phos. plate	29.00 to 30.00

Buffalo

No. 1 hvy. melting	$24.00 to $25.00
No. 2 hvy. melting	20.50 to 21.50
No. 1 busheling	24.00 to 25.00
No. 1 bundles	24.00 to 25.00
No. 2 bundles	19.00 to 20.00
Machine shop turn.	12.50 to 13.50
Mixed bor. and turn.	14.50 to 15.50
Shoveling turnings	15.50 to 16.50
Cast iron borings	14.50 to 15.50
Low phos. plate	28.00 to 29.00
Scrap rails, random lgth.	31.00 to 32.00
Rails 2 ft and under	36.00 to 37.00
RR. steel wheels	34.00 to 35.00
RR. spring steel	34.00 to 35.00
RR. couplers and knuckles	34.00 to 35.00
No. 1 machinery cast.	34.00 to 35.00
No. 1 cupola cast.	29.00 to 30.00

Detroit

Brokers' buying prices per gross ton, on cars:

No. 1 hvy. melting	$18.00 to $19.00
No. 2 hvy. melting	16.00 to 17.00
No. 1 bundles, openhearth	19.00 to 20.00
No. 2 bundles	16.00 to 17.00
New busheling	18.00 to 19.00
Drop forge flashings	18.00 to 19.00
Machine shop turn.	7.00 to 8.00
Mixed bor. and turn.	9.00 to 10.00
Shoveling turnings	9.00 to 10.00
Cast iron borings	9.00 to 10.00
Low phos. punch'gs, plate	20.00 to 21.00
No. 1 cupola cast.	36.00
Heavy breakable cast.	25.00
Stove plate	29.00
Automotive cast.	36.00

St. Louis

No. 1 hvy. melting	$25.00 to $26.00
No. 2 hvy. melting	23.00 to 24.00
No. 1 bundles	25.00 to 26.00
No. 2 bundles	21.00 to 22.00
Machine shop turn.	9.00 to 10.00
Cast iron borings	11.00 to 12.00
Shoveling turnings	11.00 to 12.00
No. 1 RR. hvy. melting	29.00 to 30.00
Rails, random lengths	33.00 to 34.00
Rails, 18 in. and under	38.00 to 39.00
Locomotive tires, uncut	31.00 to 32.00
Angles and splice bars	31.00 to 32.00
Std. steel car axles	35.00 to 36.00
RR. spring steel	31.00 to 32.00
Cupola cast.	37.00 to 38.00
Hvy. breakable cast.	25.00 to 26.00
Cast iron brake shoes	32.00 to 33.00
Stove plate	28.00 to 29.00
Cast iron car wheels	30.00 to 31.00
Malleable	34.00 to 35.00
Unstripped motor blocks.	25.00 to 26.00

New York

Brokers' buying prices per gross ton, on cars:

No. 1 hvy. melting	$16.00 to $17.00
No. 2 hvy. melting	13.00 to 14.00
No. 2 bundles	11.00 to 12.00
Machine shop turn.	4.00 to 6.00
Mixed bor. and turn.	7.00 to 8.00
Shoveling turnings	8.00 to 9.00
Clean cast chem. borings.	18.00 to 19.00
No. 1 machinery cast.	35.00 to 36.00
Mixed yard cast.	29.00 to 30.00
Charging box cast.	29.00 to 30.00
Heavy breakable cast.	29.00 to 30.00
Unstripped motor blocks	22.00 to 23.00

Birmingham

No. 1 hvy. melting	$24.00 to $25.00
No. 2 hvy. melting	22.00 to 23.00
No. 1 bundles	24.00 to 25.00
No. 2 bundles	21.00 to 22.00
No. 1 busheling	24.00 to 25.00
Machine shop turn.	14.00 to 15.00
Shoveling turnings	17.00 to 18.00
Cast iron borings	17.00 to 18.00
Electric furnace bundles	28.00 to 28.50
Bar crops and plate	31.00 to 32.00
Structural and plate, 2 ft.	31.00 to 32.00
No. 1 RR hvy. melting	26.00 to 27.00
Scrap rails, random lgth.	34.00 to 35.00
Rails, 18 in. and under	40.00 to 41.00
Angles & splice bars	38.00 to 39.00
Std. steel axles	35.00 to 36.00
No. 1 cupola cast.	41.00 to 42.00
Stove plate	38.00 to 39.00
Cast iron car wheels	34.00 to 35.00
Charging box cast.	24.00 to 25.00
Heavy breakable	25.00 to 26.00
Unstripped motor blocks	32.00 to 33.00
Mashed tin cans	15.00 to 16.00

Boston

Brokers' buying prices per gross ton, on cars:

No. 1 hvy. melting	$14.00 to $15.00
No. 2 hvy. melting	12.00 to 13.00
No. 1 bundles	14.00
No. 2 bundles	10.00 to 11.00
No. 1 busheling	12.00 to 13.00
Elec. furnace, 3 ft & under	14.00 to 15.00
Machine shop turn.	2.00
Mixed bor. and short turn.	2.00 to 3.00
Shoveling turnings	5.00 to 6.00
Clean cast chem. borings	13.00 to 14.00
No. 1 machinery cast.	27.00 to 28.00
Mixed cupola cast.	23.00 to 24.00
Heavy breakable cast.	26.00 to 26.50
Stove plate	20.00 to 21.00
Unstripped motor blocks.	8.00 to 9.00

Cincinnati

Brokers' buying prices per gross ton, on cars:

No. 1 hvy. melting	$23.00 to $24.00
No. 2 hvy. melting	20.00 to 21.00
No. 1 bundles	23.00 to 24.00
No. 2 bundles	18.00 to 19.00
Machine shop turn.	10.00 to 11.00
Mixed bor. and turn.	13.50 to 14.50
Shoveling turnings	13.50 to 14.50
Cast iron borings	13.50 to 14.50
Low phos., 18 in. & under	31.00 to 32.00
Rails, random lengths	35.00 to 36.00
Rails, 18 in. and under	43.00 to 44.00
No. 1 cupola cast.	36.00 to 37.00
Hvy. breakable cast.	31.00 to 32.00
Drop broken cast.	43.00 to 44.00

San Francisco

No. 1 hvy. melting		$20.00
No. 2 hvy. melting		16.00
No. 1 bundles		19.00
No. 2 bundles		16.00
No. 3 bundles		12.00
Machine shop turn.		5.00
Cast iron borings		9.00
No. 1 RR, hvy. melting		23.00
No. 1 cupola cast.	$39.00 to	40.00

Los Angeles

No. 1 hvy. melting		$20.00
No. 2 hvy. melting		16.00
No. 1 bundles		19.00
No. 2 bundles		16.00
No. 3 bundles		12.00
Machine shop turn.		5.00
Shoveling turnings	$7.00 to	9.00
Cast iron borings	7.00 to	9.00
Elec. fur. 1 ft and under.		25.00
No. 1 RR. hvy. melting		20.00
No. 1 cupola cast.	39.00 to	40.00

Seattle

No. 1 hvy. melting		$25.00
No. 2 hvy. melting		21.00
No. 1 bundles		22.00
No. 2 bundles		16.00
No. 3 bundles		12.00
No. 1 cupola cast.		37.00
Mixed yard cast.		35.00

Hamilton, Ont.

No. 1 hvy. melting	$26.00
No. 2 hvy. melting	23.00
No. 1 bundles	26.00
No. 2 bundles	21.00
Mixed steel scrap	20.00
Bushelings	21.00
Bush., new fact prep'd.	24.00
Bush., new fact unprep'd.	20.00
Short steel turnings	15.00
Mixed bor. and turn.	15.00
Rails, remelting	35.00
Cast scrap	42.00

SCRAP

for your every requirement

LURIA BROTHERS AND COMPANY, INC.

CONSULT OUR NEAREST OFFICE FOR THE PURCHASE AND SALE OF SCRAP

MAIN OFFICE
LINCOLN-LIBERTY BLDG.
Philadelphia 7, Penna.

PLANTS
LEBANON, PENNA. — DETROIT (ECORSE), MICHIGAN
READING, PENNA. — PITTSBURGH, PENNA.
MODENA, PENNA. — ERIE, PENNA.

OFFICES
BIRMINGHAM, ALA. — DETROIT, MICH. — PITTSBURGH, PENNA.
BOSTON, MASS. — HOUSTON, TEXAS — PUEBLO, COLORADO
BUFFALO, N. Y. — LEBANON, PENNA. — READING, PENNA.
CHICAGO, ILLINOIS — LOS ANGELES, CAL. — ST. LOUIS, MO.
CLEVELAND, OHIO — NEW YORK, N. Y. — SAN FRANCISCO, CAL.
SEATTLE, WASH.

LEADERS IN IRON AND STEEL SCRAP SINCE 1889

Berman

Comparison of Prices

(Effective Feb. 9, 1954)

Steel prices on this page are the average of various f.o.b. quotations of major producing areas: Pittsburgh, Chicago, Gary, Cleveland, Youngstown.

Price advances over previous week are printed in Heavy Type; declines appear in *Italics*.

	Feb. 9 1954	Feb. 2 1954	Jan. 12 1954	Feb. 10 1953
Flat-Rolled Steel: (per pound)				
Hot-rolled sheets	3.925¢	3.925¢	3.925¢	3.775¢
Cold-rolled sheets	4.775	4.775	4.775	4.575
Galvanized sheets (10 ga.)	5.275	5.275	5.275	5.075
Hot-rolled strip	3.925	3.925	3.925	3.725
Cold-rolled strip	5.513	5.513	5.513	5.20
Plate	4.10	4.10	4.10	3.90
Plates wrought iron	9.30	9.30	9.30	9.00
Stainl's C-R strip (No. 302)	41.50	41.50	41.50	36.75*
Tin and Terneplate: (per base box)				
Tinplate (1.50 lb.) cokes	$8.95	$8.95	$8.95	$8.95
Tinplate, electro (0.50 lb.)	7.65	7.65	7.65	7.65
Special coated mfg. terns	7.75	7.75	7.75	7.75
Bars and Shapes: (per pound)				
Merchant bars	4.16¢	4.16¢	4.16¢	3.95¢
Cold finished bars	5.20	5.20	5.20	4.925
Alloy bars	4.875	4.875	4.875	4.675
Structural shapes	4.10	4.10	4.10	3.85
Stainless bars (No. 302)	35.50	35.50	35.50	31.50*
Wrought iron bars	10.40	10.40	10.40	10.05
Wire: (per pound)				
Bright wire	5.525¢	5.525¢	5.525¢	5.225¢
Rails: (per 100 lb.)				
Heavy rails	$4.325	$4.325	$4.325	$3.775
Light rails	5.20	5.20	5.20	4.25
Semifinished Steel: (per net ton)				
Rerolling billets	$62.00	$62.00	$62.00	$59.00
Slabs, rerolling	62.00	62.00	62.00	59.00
Forging billets	75.50	75.50	75.50	70.50
Alloy blooms, billets, slabs	82.00	82.00	82.00	76.00
Wire Rod and Skelp: (per pound)				
Wire rods	4.525¢	4.525¢	4.525¢	4.325¢
Skelp	3.75	3.75	3.75	3.55
Finished Steel Composite: (per pound)				
Base price	4.634¢	4.634¢	4.634¢	4.376¢

* Add 4.7 pct.

	Feb. 9 1954	Feb. 2 1954	Jan. 12 1954	Feb. 10 1953
Pig Iron: (per gross ton)				
Foundry, del'd Phila.	$61.19	$61.19	$61.19	$60.69
Foundry, Valley	56.50	56.50	56.50	55.00
Foundry, Southern, Cin'ti	60.43	60.43	60.43	58.93
Foundry, Birmingham	52.88	52.88	52.88	51.38
Foundry, Chicago†	56.50	56.50	56.50	55.00
Basic del'd, Philadelphia	60.27	60.27	60.27	59.77
Basic, Valley furnace	56.00	56.00	56.00	54.50
Malleable, Chicago†	56.50	56.50	56.50	55.00
Malleable, Valley	56.50	56.50	56.50	55.00
Ferromanganese‡, cents per lb.	10.00¢	10.00¢	10.00¢	8.06¢

† The switching charge for delivery to foundries in the Chicago district is $1 per ton.

‡ Average of U. S. Prices quoted on Ferroalloy pages, 76 pct Mn basis.

Pig Iron Composite: (per gross ton)				
Pig iron	$56.59	$56.59	$56.59	$55.26
Scrap: (per gross ton)				
No. 1 steel, Pittsburgh	*$28.50*	$29.50	$30.50	$43.00*
No. 1 steel, Phila. area	*25.50*	26.50	27.50	41.50*
No. 1 steel, Chicago	26.00	26.00	28.50	41.50*
No. 1 bundles, Detroit	*19.50*	20.50	21.50	41.15*
Low phos., Youngstown	*29.50*	30.50	31.00	46.50*
No. 1 mach'y cast, Pittsburgh	42.50	42.50	43.50	52.00
No. 1 mach'y cast, Philadel'a.	39.00	39.00	40.50	52.00
No. 1 mach'y cast, Chicago	34.00	33.50	36.50	46.50
Steel Scrap Composite: (per gross ton)				
No. 1 heavy melting scrap	*$26.67*	$27.33	$28.83	$42.00
Coke, Connellsville: (per net ton at oven)				
Furnace coke, prompt	$14.38	$14.38	$14.38	$14.75
Foundry coke, prompt	17.25	17.25	17.25	17.75
Nonferrous Metals: (cents per pound to large buyers)				
Copper, electrolytic, Conn.	29.75‡	29.75‡	29.75‡	24.50
Copper, Lake, Conn.	30.00	30.00	30.00	24.625
Tin, Straits, New York	85.25†	85.00	84.50	$1.21½
Zinc, East St. Louis	9.50	9.50	10.00	11.50
Lead, St. Louis	12.80	12.80	13.30	13.30
Aluminum, virgin ingot	21.50	21.50	21.50	20.50
Nickel, electrolytic	63.08	63.08	63.08	63.08
Magnesium, ingot	27.75	27.75	27.75	24.50
Antimony, Laredo, Tex.	28.50	28.50	28.50	34.50

† Tentative. ‡ Average. * Revised.

Finished Steel Composite

Weighted index based on steel bars, shapes, plates, wire, rails, black pipe, hot and cold rolled sheets and strips.

Pig Iron Composite

Based on averages for basic iron at Valley furnaces and foundry iron at Chicago, Philadelphia, Buffalo, Valley and Birmingham.

Steel Scrap Composite

Average of No. 1 heavy melting steel scrap delivered to consumers at Pittsburgh, Philadelphia and Chicago.

PIG IRON

Dollars per gross ton, f.o.b., subject to switching charges.

Producing Point	Basic	Fdry.	Mall.	Bess.	Low Phos.
Bethlehem *B3*	58.00	58.50	59.00	59.50	.....
Birmingham *R3*	52.38	52.88	.....	.....	.....
Birmingham *W9*	52.38	52.88	.....	.....	.....
Birmingham *S5*	52.38	52.88	.....	.....	.....
Buffalo *R3*	56.00	56.50	57.00	.....	.....
Buffalo *H1*	56.00	56.50	57.00	.....	.....
Buffalo *W6*	56.00	56.50	57.00	.....	.....
Chicago *I4*	56.00	56.50	56.50	57.00	.....
Cleveland *A5*	56.00	56.50	56.50	57.00	61.00
Cleveland *R3*	56.00	56.50	56.50	.....	.....
Daingerfield *L3*	52.50	52.50	52.50	.....	.....
Duluth *I4*	56.00	56.50	56.50	57.00	.....
Erie *I4*	56.00	56.50	56.50	57.00	.....
Everett *M6*	.....	63.00	63.50	.....	.....
Fontana *K1*	62.00	62.50	.....	.....	.....
Geneva, Utah *C7*	56.00	56.50	.....	.....	.....
Granite City *G2*	57.90	58.40	58.90	.....	.....
Hubbard *Y1*	.....	.....	56.50	.....	.....
Minnequa *C6*	58.00	59.00	59.00	.....	.....
Monessen *P6*	56.00	.....	.....	.....	.....
Neville Isl. *P4*	56.00	56.50	56.50	.....	.....
Pittsburgh *U1*	56.00	.....	.....	57.00	.....
Sharpsville *S3*	56.00	56.50	56.50	57.00	.....
Steelton *B3*	58.00	58.50	59.00	59.50	64.00
Swedeland *A2*	58.00	58.50	59.00	59.50	.....
Toledo *I4*	56.00	56.50	56.50	57.00	.....
Troy, N. Y. *R3*	58.00	58.50	59.00	59.50	64.00
Youngstown *Y1*	.....	.....	56.50	57.00	.....
N. Tonawanda *T1*	.....	56.50	57.00	.....	.....

DIFFERENTIALS: Add 50¢ per ton for each 0.25 pct silicon over base (1.75 to 2.25 pct except low phos., 1.75 to 2.00 pct), 50¢ per ton for each 0.50 pct manganese over 1 pct, $2 per ton for .05 to 0.75 pct nickel, $1 for each additional 0.25 pct nickel. Subtract 38¢ per ton for phosphorus, content 0.70 and over.

Silvery Iron: Buffalo, *H1*, $68.25; Jackson, *J1*, *G1*, $67.00. Add $1.50 per ton for each 0.50 pct silicon over base (6.01 to 6.50 pct) up to 17 pct. Add $1 per ton for 0.75 pct. or more phosphorus. Add 75¢ for each 0.50 pct. manganese over 1.0 pct. Bessemer ferrosilicon prices are $1 over comparable silvery iron.

STAINLESS STEEL

Base price cents per lb., f.o.b. mill

Product	301	302	303	304	316	321	347	410	416	430
Ingots, rerolling	16.25	17.25	18.75	18.25	28.00	22.75	24.50	14.00	.....	14.25
Slabs, billets, rerolling	20.50–20.75	22.75	24.75	23.75	36.25	29.50	32.25	18.25	.....	18.50
Forg. discs, die blocks, rings	38.50	38.50	41.50	40.50	60.00	45.50	50.75	31.00	31.75	31.75
Billets, forging	29.50	29.75	32.25	31.00	46.50–46.75	35.25	39.50	24.00	24.50	24.50
Bars, wires, structurals	35.25	35.50	38.25	37.25	55.50	42.00	46.75	28.75	29.25	29.25
Plates	37.25	37.50	39.75	39.75	58.75–59.00	45.75–46.00	51.25	30.00	30.50–31.00	30.50
Sheets	46.25	46.50	48.75	48.75	64.50	55.50	60.75	40.75	41.25	43.50
Strip, hot-rolled	29.75	32.00	36.75	34.25	55.00	42.00	46.50	26.25	.....	27.00
Strip, cold-rolled	38.25	41.50	45.50	43.75	66.50	54.50	59.25	34.25	41.25	34.75

STAINLESS STEEL PRODUCING POINTS—*Sheets:* Midland, Pa., *C11;* Brackenridge, Pa., *A3;* Butler, Pa., *A7;* McKeesport, Pa., *U1;* Washington, Pa., *W2, J2;* Baltimore, *E1;* Middletown, O., *A7;* Massillon, O., *R3;* Gary, *U1;* Bridgeville, Pa., *U2;* New Castle, Ind., *I2;* Ft. Wayne, *J4;* Lockport, N. Y., *R4.*

Strip: Midland, Pa., *C11;* Cleveland, *A5;* Carnegie, Pa., *S9;* McKeesport, Pa., *F1;* Reading, Pa., *C2;* Washington, Pa., *W2,* W. Leechburg, Pa., *A3;* Bridgeville, Pa., *U2;* Detroit, *M2;* Canton-Massillon, O., *R3;* Middletown, O., *A7;* Harrison, N. J., *D3;* Youngstown, *C5;* Lockport, N. Y., *S4;* Sharon, Pa., *S1;* Butler, Pa., *A7;* Wallingford, Conn., *W1* (.25¢ per lb higher); New Bedford, Mass., *R6.*

Bars: Baltimore, *A7;* Duquesne, Pa., *U1;* Munhall, Pa., *U1;* Reading, Pa., *C2;* Titusville, Pa., *U2;* Washington, Pa., *J2;* McKeesport, Pa., *U1, F1;* Bridgeville, Pa., *U2;* Dunkirk, N. Y., *A3;* Massillon, O., *R3;* Chicago, *U1;* Syracuse, N. Y., *C11;* Watervliet, N. Y., *A3;* Waukegan, *A5;* Lockport, N. Y., *S4;* Canton, O., *T5;* Ft. Wayne, *I4.*

Wire: Waukegan, *A5;* Massillon, O., *R3;* McKeesport, Pa., *F1;* Ft. Wayne, *J4;* Harrison, N. J., *D3;* Baltimore, *A7;* Dunkirk, *A3;* Monessen, *P1;* Syracuse, *C11;* Bridgeville, *U2.*

Structurals: Baltimore, *A7;* Massillon, O., *R3;* Chicago, Ill., *J4;* Watervliet, N. Y., *A3;* Syracuse, *C11.*

Plates: Brackenridge, Pa., *A3;* Chicago, *U1;* Munhall, Pa., *U1;* Midland, Pa., *C11;* New Castle, Ind., *I2;* Lockport, N. Y., *S4;* Middletown, *A7;* Washington, Pa., *J2;* Cleveland, Massillon, *R3;* Coatesville, Pa., *C15*

Forged discs, die blocks, rings: Pittsburgh, *C11;* Syracuse, *C11;* Ferndale, Mich., *A3;* Washington, Pa., *J2.*

Forging billets: Midland, Pa., *C11;* Baltimore, *A7;* Washington, Pa., *J2;* McKeesport, *F1;* Massillon, Canton, O., *R3;* Watervliet, *A3;* Pittsburgh, Chicago, *U1;* Syracuse, *C11.*

SOLAR'S

SURE-SPEC STEELS

steel for any part
you make for any product
anytime at minimum cost!

We are very proud of this customer's 1954 TV receiver line. This set has a bigger than life 27" screen. If you are interested, write us and we will give you the manufacturer's name.

"for service dependable as the sun"

SOLAR STEEL CORPORATION

General Offices • Cleveland, Ohio

SALES OFFICES: Bridgeport • Chicago • Cincinnati • Cleveland • Detroit • Grand Rapids
Kalamazoo • Los Angeles • Milwaukee • Nashville • Philadelphia • River Rouge
Rochester, N.Y. • Toledo • Union, N.J. • Washington, D.C. • Worcester, Mass.

FLAT ROLLED AND BAR AND TUBE STOCKS AND PROCESSING SERVICES FROM 11 PLANTS

STEEL PRICES

(Effective Feb. 9, 1954)

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

		BILLETS, BLOOMS, SLABS			PIL-ING	SHAPES STRUCTURALS			STRIP					
		Carbon Rerolling Net Ton	Carbon Forging Net Ton	Alloy Net Ton	Sheet Steel	Carbon	Hi Str. Low Alloy	Carbon Wide-Flange	Hot-rolled	Cold-rolled	Hi Str. H.R. Low Alloy	Hi Str. C.R. Low Alloy	Alloy Hot-rolled	Alloy Cold-rolled
EAST	Bethlehem, Pa.			$82.00 *B3*		4.15 *B3*	6.20 *B3*	4.15 *B3*						
	Buffalo, N. Y.	$62.00 *B3*	$75.50 *B3,* *R3*	$82.00 *B3, R3*	4.925 *B3*	4.15 *B3*	6.20 *B3*	4.15 *B3*	3.925 *B3, R3*	5.45 *B3*	6.00 *B3*	8.425 *B3*		
	Claymont, Del.													
	Conshohocken, Pa.													
	Coatesville, Pa.								4.05 *A2*		5.90 *A2*			
	New Bedford, Mass.									6.00 *R6*				
	Harrison, N. J.													12.00 *C11*
	Johnstown, Pa.	$62.00 *B3*	$75.50 *B3*	$82.00 *B3*		4.15 *B3*	6.20 *B3*							
	Morrisville, Pa.													
	New Haven, Conn.									5.90 *D1* 6.20 *A5*				
	Phoenixville, Pa.					4.15 *P2*		4.95 *P2*						
	Sparrows Pt., Md.								3.925 *B3*	5.45 *B3*	6.00 *B3*	8.425 *B3*		
	Wallingford, Conn.									5.90 *W1*				
	Worcester, Mass.									6.30 *A5*				12.30 *A5* 12.45 *N7*
MIDDLE WEST	Alton, Ill.								4.10 *L1*					
	Ashland, Ky.								3.925 *A7*					
	Canton-Massillon, Dover, Ohio		$75.50 *R3*	$82.00 *R3*										12.00 *G4*
	Chicago, Ill.	$62.00 *U1*	$75.50 *R3, U1, W8*	$82.00 *U1, W8, R3*	4.925 *U1*	4.10 *U1, W8*	6.175 *U1, Y1*	4.10 *U1*	3.925 *A1, W8*	5.70 *A1*	5.95 *R3*		6.40 *W8*	
	Sterling, Ill.													
	Cleveland, Ohio		$75.50 *R3*							5.45 *A5, J3*		7.80 *J3* 8.15 *A5*		12.00 *A5* 12.15 *N7*
	Detroit, Mich.		$78.50 *R5*	$84.00 *R5*					4.125 *G3* 4.15 *M2*	5.65 *D1, D2, G3, M2, P11*	6.15 *G3*	7.90 *D2* 8.35 *G3*		
	Duluth, Minn.													
	Gary, Ind. Harbor, Indiana	$62.00 *U1*	$75.50 *U1*	$82.00 *U1, Y1*	4.925 *I3*	4.10 *I3, U1*	6.175 *U1, I3*		3.925 *I3, U1, Y1*	5.70 *I3*	5.95 *U1, I3* 6.45 *Y1*		6.40 *U1*	
	Granite City, Ill.													
	Kokomo, Ind.													
	Mansfield, Ohio													
	Middletown, Ohio									5.45 *A7*				
	Niles, Warren, Ohio Sharon, Pa.								3.925 *S1*	5.45 *S1, T4*	5.95 *S1*	7.65 *S1*	6.40 *S1*	12.00 *S1*
	Pittsburgh, Pa. Midland, Pa. Butler, Pa.	$62.00 *U1, J3*	$75.50 *J3, U1*	$82.00 *U1, C11*	4.925 *U1*	4.10 *J3, U1*	6.175 *J3, U1*	4.10 *U1*	3.925 *A7, P6* 3.95 *S7* 4.425 *S9*	5.45 *B4, J3, S7*		7.80 *J3*	6.40 *S9* 6.45 *S7*	12.00 *S9* 12.15 *S7*
	Portsmouth, Ohio													
	Weirton, Wheeling, Follansbee, W. Va.					4.35 *W3*			3.925 *W3*	5.45 *F3, W3*	5.95 *W3*	8.15 *W3*		
	Youngstown, Ohio			$82.00 *Y1, C10*		4.10 *Y1*	6.675 *Y1*		3.925 *R3, U1, Y1*	5.45 *R3, Y1* 5.95 *C5*	5.95 *U1, R3* 6.45 *Y1*	7.60 *R3* 8.30 *Y1*	6.40 *U1*	12.00 *C5*
WEST	Fontana, Cal.	$70.00 *K1*	$83.50 *K1*	$101.00 *K1*		4.75 *K1*	6.825 *K1*	5.30 *K1*	4.70 *K1*	7.35 *K1*	7.05 *K1*		7.80 *K1*	13.65 *K1*
	Geneva, Utah		$75.50 *C7*			4.10 *C7*	6.175 *C7*							
	Kansas City, Mo.					4.80 *S2*	6.875 *S2*		4.625 *S2*		6.65 *S2*		7.10 *S2*	
	Los Angeles, Torrance, Cal.		$94.50 *B2*	$102.00 *B2*		4.80 *B2, C7*	6.85 *B2*		4.675 *B2, C7*	7.50 *C1*			7.80 *B2*	
	Minnequa, Colo.					4.55 *C6*			5.025 *C6*					
	San Francisco, Niles, Pittsburg, Cal.		$94.50 *B2*			4.75 *B2* 4.91 *P9*	6.80 *B2*		4.675 *B2, C7*					
	Seattle, Wash.		$94.50 *B2, S11*			4.85 *B2*	6.90 *B2*							
SOUTH	Atlanta, Ga.								4.175 *A8*					
	Fairfield, Ala. Alabama City, Ala.	$62.00 *T2*	$75.50 *T2*			4.10 *R3, T2*	6.175 *T2*		3.925 *R3, T2*		5.95 *T2*			
	Houston, Tex.		$85.50 *S2*	$92.00 *S2*		4.60 *S2*			4.425 *S2*				6.80 *S2*	

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

IRON AGE

STEEL PRICES

(Effective Feb. 9, 1954)

SHEETS									WIRE ROD	TINPLATE†		BLACK PLATE	
Hot-rolled *18* ga. & h.yr.	Cold-rolled	Galvanized *10* ga.	Enameling *12* ga.	Long Terne *10* ga.	Hi Str. Low Alloy H.R.	Hi Str. Low Alloy C.R.	Hi Str. Low Alloy Galv.	Hot-rolled *19* ga.		Cokes* *1.25*-lb. base box	Electro* *0.25*-lb. base box	Hollowware Enameling *29* ga.	
													Bethlehem, Pa.
3.925 *B3*	4.77 *B3*				5.90 *B3*	7.225 *B3*			4.525 *W6*				Buffalo, N. Y.
										† Special coated mfg. terne deduct 95¢ from 1.25-lb coke base box price. Can-making quality blackplate 55 to 128 lb deduct $2.20 from 1.25-lb coke base box. * COKES: 1.50-lb add 25¢. ELECTRO: 0.50-lb add 25¢; 0.75-lb add 65¢.			Claymont, Del.
													Coatesville, Pa.
4.05 *A2*					5.90 *A2*								Conshohocken, Pa.
													Harrisburg, Pa.
													Hartford, Conn.
									4.525 *B3*				Johnstown, Pa.
4.025 *U1*	4.875 *U1*									$8.80 *U1*	$7.50 *U1*		Morrisville, Pa.
													New Haven, Conn.
													Phoenixville, Pa.
3.925 *B3*	4.775 *B3*	5.275 *B3*			5.90 *B3*	7.225 *B3*	8.075 *B3*		4.625 *B3*	$8.80 *B3*	$7.50 *B3*		Sparrows Pt., Md.
									4.825 *A5*				Worcester, Mass.
													Trenton, N. J.
									4.70 *L1*				Alton, Ill.
3.925 *A7*		5.275 *A7*	5.175 *A7*										Ashland, Ky.
		5.275 *R1, R3*						5.05 *R1*					Canton-Massillon, Dover, Ohio
3.925 *A1, W3*					5.90 *U1*				4.525 *A5, N4, R3*				Chicago, Joliet, Ill.
									4.625 *N4*				Sterling, Ill.
3.925 *J3, R3*	4.775 *J3, R3*		5.175 *R3*		5.90 *J3, R3*	7.225 *J3, R3*			4.525 *A5*				Cleveland, Ohio
4.125 *G3* 4.15 *M2*	4.975 *G3*				6.10 *G3*	7.425 *G3*							Detroit, Mich.
3.925 *N5*													Newport, Ky.
3.925 *I3, U1, Y1*	4.775 *I3, U1, Y1*	5.275 *U1* 5.325 *I3*	5.175 *I3, U1*	5.675 *U1*	5.90 *U1, I3* 6.40 *Y1*	7.225 *U1* 7.725 *Y1*				$8.70 *I3, U1, Y1*	$7.40 *I3, U1*	6.10 *U1, Y1*	Gary, Ind. Harbor, Indiana
4.125 *G2*	4.975 *G2*	5.475 *G2*	5.875 *G2*								$7.60 *G2*	6.30 *G2*	Granite City, Ill.
4.025 *C9*		5.375 *C9*						5.025 *C9*					Kokomo, Ind.
				5.675 *E2*				5.05 *E2*					Mansfield, Ohio
	4.775 *A7*		5.175 *A7*	5.675 *A7*									Middletown, Ohio
3.925 *S1* 5.175 *N3*	5.80 *N3*	5.275 *N3*	6.525 *N3*	5.45 *S1* 5.675 *N3*	5.90 *S1*						$7.40 *R3*		Niles, Ohio Sharon, Pa.
3.925 *J3, U1, P6, A7*	4.775 *J3, U1, P6*	5.275 *U1*	5.175 *U1*		5.90 *J3, U1*	7.225 *J3, U1*	7.925 *U1*		4.525 *A5* 4.725 *P6*	$8.70 *J3, U1*	$7.40 *J3, U1*	6.10 *U1*	Pittsburgh, Pa. Midland, Pa. Butler, Pa.
									4.525 *P7*				Portsmouth, Ohio
3.925 *W3, W5*	4.775 *W3, W5* 5.775 *F3*	5.275 *W3, W5*		5.675 *W3, W5*	5.90 *W3*	7.225 *W3*				$8.70 *W3, W5*	$7.40 *W3, W5*	6.10 *F3, W5*	Weirton, Wheeling, Follansbee, W. Va.
3.925 *R3, U1, Y1*	4.775 *R3, Y1*				5.90 *U1, R3* 6.40 *Y1*	7.225 *R3* 7.725 *Y1*			4.525 *Y1*	$8.70 *R3*			Youngstown, Ohio
4.70 *K1*	5.875 *K1*				6.675 *K1*	8.275 *K1*			5.325 *K1*				Fontana, Cal.
4.025 *C7*													Geneva, Utah
								4.775 *C6*	4.865 *S2*				Kansas City, Mo.
4.625 *C7*		6.275 *C7*							5.325 *B2*				Los Angeles, Torrance, Cal.
									4.775 *C6*				Minnequa, Colo.
4.625 *C7*	5.725 *C7*	6.025 *C7*							5.175 *C7*	$9.45 *C7*	$8.15 *C7*		San Francisco, Niles, Pittsburg, Cal.
													Seattle, Wash.
													Atlanta, Ga.
3.925 *R3, T2*	4.775 *T2*	5.275 *R3, T2*			5.90 *T2*			5.125 *T2* 5.225 *R3*	4.525 *T2 R3*	$8.80 *T2*	$7.50 *T2*		Fairfield, Ala. Alabama City, Ala.
4.425 *S2*									4.925 *S2*				Houston, Texas

IRON AGE

STEEL PRICES

(Effective Feb. 9, 1954)

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

		BARS						PLATES				WIRE
		Carbon Steel	Reinforcing	Cold Finished	Alloy Hot-rolled	Alloy Cold Drawn	Hi Str. H.R. Low Alloy	Carbon Steel	Floor Plate	Alloy	Hi Str. Low Alloy	Mfg'rs. Bright
EAST	Bethlehem, Pa.				4.875 *B3*	6.325 *B3*	6.225 *B3*					
	Buffalo, N. Y.	4.15 *B3* 4.18 *R3*	4.15 *B3,R3*	5.25 *B5*	4.875 *B3,R3*	6.325 *B3,B5*	6.225 *B3*	4.10 *B3*			6.25 *B3*	5.525 *W6*
	Claymont, Del.							4.20 *C4*		5.55 *C4*		
	Coatesville, Pa.							4.20 *L4*		5.55 *L4*		
	Conshohocken, Pa.							4.25 *A2*	5.15 *A2*		6.25 *A2*	
	Harrisburg, Pa.							4.10 *C3*	5.15 *C3*			
	Hartford, Conn.			5.75 *R3*		6.775 *R3*						
	Johnstown, Pa.	4.15 *B3*	4.15 *B3*		4.875 *B3*		6.225 *B3*	4.10 *B3*		5.55 *B3*	6.25 *B3*	5.525 *B3*
	Morrisville, Pa.	4.30 *U1*	4.30 *U1*		5.025 *U1*							
	Newark, N. J.			5.65 *W10*		6.65 *W10*						
	New Haven, Conn.											
	Camden, N. J.			5.65 *P10*		6.50 *P10*						
	Putnam, Conn.			5.75 *W10*								
	Sparrows Pt., Md.		4.15 *B3*					4.10 *B3*		5.55 *B3*	6.25 *B3*	5.625 *B3*
	Palmer, Worcester, Mansfield, Mass.			5.75 *B5* 6.10 *W11*		6.775 *B5*						5.825 *A5, W6*
	Readville, Mass.			5.75 *C14*								
MIDDLE WEST	Alton, Ill.	4.35 *L1*										5.70 *L1*
	Ashland, Ky.							4.10 *A7*				
	Canton-Massillon, Ohio	4.15 *R3*		5.20 *R2,R3*	4.875 *R3, T5*	6.325 *R2,R3, T5*						
	Chicago, Joliet, Ill.	4.15 *U1, N4,W8* 4.22 *R3*	4.15 *R3,N4*	5.28 *A5,W10, W8,B5,L2*	4.875 *U1, W8,R3*	6.325 *A5,W8, W10,L2, R3,B5*		4.10 *U1,W8*	5.15 *U1*	5.55 *U1*	6.25 *U1*	5.525 *A1, R3,N4,W7*
	Cleveland, Ohio	4.21 *R3*	4.15 *R3*	5.20 *A5,C13*		6.325 *A5, C13*		4.10 *J3,R3*	5.15 *J3*		6.25 *J3*	5.525 *A5, R3,C13*
	Detroit, Mich.	4.30 *R5* 4.35 *G3*		5.35 *R5,P8* 5.40 *B5* 5.45 *P3*	4.975 *R5* 5.075 *G3*	6.425 *R5* 6.475 *P8* 6.525 *B5,P3*	6.425 *G3*	4.30 *G3*			6.45 *G3*	
	Duluth, Minn.											5.525 *A5*
	Gary, Ind. Harbor, Crawfordsville	4.15 *I3, U1, Y1*	4.15 *I3, U1, Y1*	5.20 *R3*	4.875 *I3, U1, Y1*	6.325 *R3,M5*	6.225 *U1,I3* 6.725 *Y1*	4.10 *I3, U1, Y1*	5.15 *I3*	5.55 *U1*	6.25 *U1,I3* 6.75 *Y1*	5.625 *M4*
	Granite City, Ill.							4.30 *G2*				
	Kokomo, Ind.											5.625 *C9*
	Sterling, Ill.	4.25 *N4*	4.25 *N4*									5.625 *N4*
	Niles, Ohio Sharon, Pa.							4.10 *S1*		5.55 *S1*	6.25 *S1*	
	Pittsburgh, Pa. Midland, Pa.	4.15 *J3, U1*	4.15 *J3, U1*	5.20 *A5,J3, W10,R3,C8*	4.875 *U1,C11*	6.325 *A5,C11, W10,C8*	6.225 *J3, U1*	4.10 *J3, U1*	5.15 *U1*	5.55 *U1*	6.25 *J3, U1*	5.525 *A5, J3,P6*
	Portsmouth, Ohio											5.525 *P7*
	Weirton, Wheeling, Follansbee, W. Va.	4.15 *W3*						4.10 *W3*				
	Youngstown, Ohio	4.15 *U1,Y1* 4.20 *R3*	4.15 *R3, U1, Y1*	5.20 *Y1,F2*	4.875 *U1,Y1, C10*	6.325 *Y1, C10,F2*	6.225 *U1* 6.725 *Y1*	4.10 *R3, U1, Y1*			6.75 *Y1*	5.525 *Y1*
WEST	Emeryville, Cal.	4.90 *J5*	4.90 *J5*									
	Fontana, Cal.	4.85 *K1*	4.85 *K1*		5.925 *K1*		7.475 *K1*	4.75 *K1*		6.60 *K1*	6.95 *K1*	
	Geneva, Utah							4.10 *C7*			6.25 *C7*	
	Kansas City, Mo.	4.85 *S2*	4.85 *S2*		5.575 *S2*		6.925 *S2*					6.125 *S2*
	Los Angeles, Torrance, Cal.	4.85 *B2,C7*	4.85 *B2,C7*	6.65 *R3*	5.925 *B2*		6.925 *B2*					6.475 *B2*
	Minnequa, Colo.	4.60 *C6*	4.75 *C6*					4.95 *C6*				5.775 *C6*
	Portland, Ore.	4.90 *O2*										
	San Francisco, Niles, Pittsburg, Cal.	4.85 *C7,P9* 4.90 *B2*	4.85 *C7,P9* 4.90 *B2*				6.975 *B2*					6.475 *C7*
	Seattle, Wash.	4.90 *B2,N6*	4.90 *B2,S11*				6.975 *B2*	5.00 *B2*			7.15 *B2*	
SOUTH	Atlanta, Ga.	4.40 *A8*	4.40 *A8*									5.725 *A8*
	Fairfield, Ala. Alabama City, Ala.	4.15 *T2* 4.18 *R3*	4.15 *R3, T2*				6.225 *T2*	4.10 *R3,T2*			6.25 *T2*	5.525 *R3, T2*
	Houston, Ft. Worth, Lone Star, Tex.	4.55 *S2*	4.55 *S2*		5.375 *S2*			4.50 *L3* 4.60 *S2*				5.925 *S2*

Steel Prices

(Effective Feb. 9, 1954)

Key to Steel Producers

With Principal Offices

A1 Acme Steel Co., Chicago
A2 Alan Wood Steel Co., Conshohocken, Pa.
A3 Allegheny Ludlum Steel Corp., Pittsburgh
A4 American Cladmetals Co., Carnegie, Pa.
A5 American Steel & Wire Div., Cleveland
A6 Angell Nail & Chaplet Co., Cleveland
A7 Armco Steel Corp., Middletown, O.
A8 Atlantic Steel Co., Atlanta, Ga.

B1 Babcock & Wilcox Tube Div., Beaver Falls, Pa.
B2 Bethlehem Pacific Coast Steel Corp., San Francisco
B3 Bethlehem Steel Co., Bethlehem, Pa.
B4 Blair Strip Steel Co., New Castle, Pa.
B5 Bliss & Laughlin, Inc., Harvey, Ill.

C1 Calstrip Steel Corp., Los Angeles
C2 Carpenter Steel Co., Reading, Pa.
C3 Central Iron & Steel Co., Harrisburg, Pa.
C4 Claymont Products Dept., Claymont, Del.
C5 Cold Metal Products Co., Youngstown
C6 Colorado Fuel & Iron Corp., Denver
C7 Columbia Geneva Steel Div., San Francisco
C8 Columbia Steel & Shafting Co., Pittsburgh
C9 Continental Steel Corp., Kokomo, Ind.
C10 Copperweld Steel Co., Pittsburgh, Pa.
C11 Crucible Steel Co. of America, New York
C12 Cumberland Steel Co., Cumberland, Md.
C13 Cuyahoga Steel & Wire Co., Cleveland
C14 Compressed Steel Shafting Co. Readville, Mass.
C15 G. O. Carlson, Inc., Thorndale, Pa.

D1 Detroit Steel Corp., Detroit
D2 Detroit Tube & Steel Div., Detroit
D3 Driver Harris Co., Harrison, N. J.
D4 Dickson Weatherproof Nail Co., Evanston, Ill.

E1 Eastern Stainless Steel Corp., Baltimore
E2 Empire Steel Co., Mansfield, O.

F1 Firth Sterling, Inc., McKeesport, Pa.
F2 Fitzsimmons Steel Corp., Youngstown
F3 Follansbee Steel Corp., Follansbee, W. Va.

G1 Globe Iron Co., Jackson, O.
G2 Granite City Steel Co., Granite City, Ill.
G3 Great Lakes Steel Corp., Detroit
G4 Greer Steel Co., Dover, O.

H1 Hanna Furnace Corp., Detroit

I2 Ingersoll Steel Div., Chicago
I3 Inland Steel Co., Chicago
I4 Interlake Iron Corp., Cleveland

J1 Jackson Iron & Steel Co., Jackson, O.
J2 Jessop Steel Corp., Washington, Pa.
J3 Jones & Laughlin Steel Corp., Pittsburgh
J4 Joslyn Mfg. & Supply Co., Chicago
J5 Judson Steel Corp., Emeryville, Calif.

K1 Kaiser Steel Corp., Fontana, Cal.
K2 Keystone Steel & Wire Co., Peoria
K3 Koppers Co., Granite City, Ill.

L1 Laclede Steel Co., St. Louis
L2 La Salle Steel Co., Chicago
L3 Lone Star Steel Co., Dallas
L4 Lukens Steel Co., Coatesville, Pa.

M1 Mahoning Valley Steel Co., Niles, O.
M2 McLouth Steel Corp., Detroit
M3 Mercer Tube & Mfg. Co., Sharon, Pa.
M4 Mid-States Steel & Wire Co., Crawfordsville, Ind.
M5 Monarch Steel Co., Inc., Hammond, Ind.
M6 Mystic Iron Works, Everett, Mass.

N1 National Supply Co., Pittsburgh
N2 National Tube Co., Pittsburgh
N3 Niles Rolling Mill Div., Niles, O.
N4 Northwestern Steel & Wire Co., Sterling, Ill.
N5 Newport Steel Corp., Newport, Ky.
N6 Northwest Steel Rolling Mills, Seattle
N7 Newman Crosby Steel Co., Pawtucket, R. I.

O1 Oliver Iron & Steel Co., Pittsburgh
O2 Oregon Steel Mills, Portland

P1 Page Steel & Wire Div., Monessen, Pa.
P2 Phoenix Iron & Steel Co., Phoenixville, Pa.
P3 Pilgrim Drawn Steel Div., Plymouth, Mich.
P4 Pittsburgh Coke & Chemical Co., Pittsburgh
P5 Pittsburgh Screw & Bolt Co., Pittsburgh
P6 Pittsburgh Steel Co., Pittsburgh
P7 Portsmouth Div., Detroit Steel Corp., Detroit
P8 Plymouth Steel Co., Detroit
P9 Pacific States Steel Co., Niles, Cal.
P10 Precision Drawn Steel Co., Camden, N. J.
P11 Production Steel Strip Corp., Detroit

R1 Reeves Steel & Mfg. Co., Dover, O.
R2 Reliance Div., Eaton Mfg. Co., Massillon, O.
R3 Republic Steel Corp., Cleveland
R4 Roebling Sons Co., John A., Trenton, N. J.
R5 Rotary Electric Steel Co., Detroit
R6 Rodney Metals, Inc., New Bedford, Mass.

S1 Sharon Steel Corp., Sharon, Pa.
S2 Sheffield Steel Corp., Kansas City
S3 Shenango Furnace Co., Pittsburgh
S4 Simonds Saw & Steel Co., Fitchburg, Mass.
S5 Sloss Sheffield Steel & Iron Co., Birmingham
S6 Standard Forging Corp., Chicago
S7 Stanley Works, New Britain, Conn.
S8 Superior Drawn Steel Co., Monaca, Pa.
S9 Superior Steel Corp., Carnegie, Pa.
S10 Sweet's Steel Co., Williamsport, Pa.
S11 Seidelhuber Steel Rolling Mills, Seattle

T1 Tonawanda Iron Div., N. Tonawanda, N. Y.
T2 Tennessee Coal & Iron Div., Fairfield
T3 Tennessee Products & Chem. Corp., Nashville
T4 Thomas Strip Div., Warren, O.
T5 Timken Steel & Tube Div., Canton, O.
T6 Tremont Nail Co., Wareham, Mass.
T7 Texas Steel Co., Fort Worth

U1 United States Steel Corp., Pittsburgh
U2 Universal-Cyclops Steel Corp., Bridgeville, Pa.

W1 Wallingford Steel Co., Wallingford, Conn.
W2 Washington Steel Corp., Washington, Pa.
W3 Weirton Steel Co., Weirton, W. Va.
W4 Wheatland Tube Co., Wheatland, Pa.
W5 Wheeling Steel Corp., Wheeling, W. Va.
W6 Wickwire Spencer Steel Div., Buffalo
W7 Wilson Steel & Wire Co., Chicago
W8 Wisconsin Steel Co., S. Chicago, Ill.
W9 Woodward Iron Co., Woodward, Ala.
W10 Wyckoff Steel Co., Pittsburgh
W11 Worcester Pressed Steel Co., Worcester, Mass.

Y1 Youngstown Sheet & Tube Co., Youngstown

PIPE AND TUBING

Base discounts (pct) f.o.b. mills. Base price about $200 per net ton.

	BUTTWELD														SEAMLESS							
	½ In.		¾ In.		1 In.		1¼ In.		1½ In.		2 In.		2½–3 In.		2 In.		2½ In.		3 In.		3½–4 In.	
STANDARD T. & C.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.
Sparrows Pt. *B3*	24.25	8.0	27.25	12.0	29.75	15.5	32.25	16.5	32.75	17.5	33.25	18.0	34.75	18.0								
Youngstown *R3*	26.25	10.0	29.25	14.0	31.75	17.5	34.25	18.5	34.75	19.5	35.25	20.0	36.75	20.0								
Fontana *K1*	13.25	+2.0	16.25	1.0	18.75	4.5	21.25	5.5	21.75	6.5	22.25	7.0	23.75	7.0								
Pittsburgh *J3*	26.25	10.0	29.25	14.0	31.75	17.5	34.25	18.5	34.75	19.5	35.25	20.0	36.75	20.0	15.75	0.0	19.75	2.5	22.25	5.0	23.75	6.5
Alton, Ill. *L1*	24.25	8.0	27.25	12.0	29.75	15.5	32.25	16.5	32.75	17.5	33.25	18.0	34.75	18.0								
Sharon *M3*	26.25	10.0	29.25	14.0	31.75	17.5	34.25	18.5	34.75	19.5	35.25	20.0	36.75	20.0								
Morrisville *N2*	24.25		27.25		29.75		32.25		32.75		33.25		34.75									
Pittsburgh *N1*	26.25	10.0	29.25	14.0	31.75	17.5	34.25	18.5	34.75	19.5	35.25	20.0	36.75	20.0	15.75	0.0	19.75	2.5	22.25	5.0	23.75	6.5
Wheeling *W5*	26.25	10.0	29.25	14.0	31.75	17.5	34.25	18.5	34.75	19.5	35.25	20.0	36.75	20.0								
Wheatland *W4*	26.25	10.0	29.25	14.0	31.75	17.5	34.25	18.5	34.75	19.5	35.25	20.0	36.75	20.0								
Youngstown *Y1*	26.25	10.0	29.25	14.0	31.75	17.5	34.25	18.5	34.75	19.5	35.25	20.0	36.75	20.0	15.75	0.0	19.75	2.5	22.25	5.0	23.75	6.5
Indiana Harbor *Y1*	25.25	9.0	28.25	13.0	30.75	16.5	33.25	17.5	33.75	18.5	34.25	19.0	35.75	19.0								
Lorain *N2*	26.25	10.0	29.25	14.0	31.75	17.5	34.25	18.5	34.75	19.5	35.25	20.0	36.75	20.0	15.75	0.0	19.75	2.5	22.25	5.0	23.75	6.5
EXTRA STRONG PLAIN ENDS																						
Sparrows Pt. *B3*	27.75	13.0	31.75	17.0	33.75	20.5	34.25	19.5	34.75	20.5	35.25	21.0	35.75	20.0								
Youngstown *R3*	29.75	15.0	33.75	19.0	35.75	22.5	36.25	21.5	36.75	22.5	37.25	23.0	37.75	22.0								
Fontana *K1*	16.75		20.75		22.75		23.25		23.75		24.25		24.75									
Pittsburgh *J3*	29.75	15.0	33.75	19.0	35.75	22.5	36.25	21.5	36.75	22.5	37.25	23.0	37.75	22.0	16.25	0.75	20.75	3.75	23.75	6.75	28.75	9.75
Alton, Ill. *L1*	27.75	13.0	31.75	17.0	33.75	20.5	34.25	19.5	34.75	20.5	35.25	21.0	35.75	20.0								
Sharon *M3*	29.75	15.0	33.75	19.0	35.75	22.5	36.25	21.5	36.75	22.5	37.25	23.0	37.75	22.0								
Pittsburgh *N1*	29.75	15.0	33.75	19.0	35.75	22.5	36.25	21.5	36.75	22.5	37.25	23.0	37.75	22.0	16.25	0.75	20.75	3.75	23.75	6.75	28.75	9.75
Wheeling *W5*	29.75	15.0	33.75	19.0	35.75	22.5	36.25	21.5	36.75	22.5	37.25	23.0	37.75	22.0								
Wheatland *W4*	29.75	15.0	33.75	19.0	35.75	22.5	36.25	21.5	36.75	22.5	37.25	23.0	37.75	22.0								
Youngstown *Y1*	29.75	15.0	33.75	19.0	35.75	22.5	36.25	21.5	36.75	22.5	37.25	23.0	37.75	22.0	16.25	0.75	20.75	3.75	23.75	6.75	28.75	9.75
Indiana Harbor *Y1*	28.75	14.0	32.75	18.0	34.75	21.5	35.25	20.5	35.75	21.5	36.25	22.0	36.75	21.0								
Lorain *N2*	29.75	15.0	33.75	19.0	35.75	22.5	36.25	21.5	36.75	22.5	37.25	23.0	37.75	22.0	16.25	0.75	20.75	3.75	23.75	6.75	28.75	9.75

Galvanized discounts based on zinc, at 11¢ per lb, East St. Louis. For each 1¢ change in zinc, discounts vary as follows: ½ in., ¾ in., and 1 in., 1 pt.; 1¼ in., 1½ in., 2 in., ¾ pt.; 2½ in., 3 in., ½ pt. Calculate discounts on even cents per lb of zinc, i.e., if zinc is 16.51¢ to 17.50¢ per lb, use 17¢. Jones & Laughlin discounts apply only when zinc price changes 1¢.

Threads only buttweld and seamless, 2¼ pts. higher discount. Plain ends, buttweld and seamless, 3 in. and under, 4½ pts. higher discount. Buttweld jobbers' discount, 5 pct. East St. Louis zinc price now 9.50¢.

Steel Prices

(Effective Feb. 9, 1954)

CLAD STEEL

	Plate	Sheet
Stainless-carbon		
No. 304, 20 pct.		
Coatesville, Pa., *L4*	*32.7	
Washington Pa., *J2*	....	
Claymont, Del. *C4*	....	
New Castle, Ind. *I2*	....	32.50
Nickel-carbon		
10 pct. Coatesville, Pa. *L4*	37.5	
Inconel-carbon		
10 pct. Coatesville, Pa. *L4*	46.10	
Monel-carbon		
10 pct. Coatesville, Pa. *L4*	38.90	
Aluminized steel sheets, hot dip, Butler, Pa., *A7*	....	....

* Includes annealing and pickling, sandblasting.

CAST IRON WATER PIPE

Per Net Ton

6 to 24-in., del'd Chicago $111.80 to $115.30
6 to 24-in., del'd N. Y. .. 115.00 to 116.00
6 to 24-in., Birmingham. 98.00 to 102.50
6-in. and larger f.o.b. cars, San Francisco, Los Angeles, for all rail shipments; rail and water shipments less .....$129.50 to $131.50
Class "A" and gas pipe, $5 extra; 4-in. pipe is $5 a ton above 6-in.

ELECTRICAL SHEETS

22 Ga. H-R cut length F.o.b. Mill Cents Per Lb.	Armature	Elec.	Motor	Dynamo	Transf. 72	Transf. 65	Transf. 58
Beech Bottom *W5*	....	8.75	9.75	10.65	11.60	12.15	12.65
Brackenridge *A3*	....	8.75	9.75	10.65	11.60	.....	12.65
Granite City *G2*	....	8.55	9.80	.....	.....	.....	.....
Ind. Harbor *I3*	8.15	8.75	9.75	.....	.....	.....	.....
Mansfield *E2*	8.15	8.75	9.75	10.65	.....	.....	.....
Newport, Ky. *N5*	8.15	8.75	9.75	10.65	11.60	.....	.....
Niles, O. *N3*	8.15	8.75	9.75	.....	.....	.....	.....
Vandergrift *U1*	8.15	8.75	9.75	10.65	11.60	12.15	12.65
Warren, O. *R3*	8.15	8.75	9.75	.....	.....	.....	.....
Zanesville *A7*	8.15	8.75	9.75	10.65	11.60	12.15	12.65

TOOL STEEL

F.o.b. Mill

W	Cr	V	Mo	Co	Base per lb
18	4	1	—	—	$1.48
18	4	1	—	5	2.16
18	4	2	—	—	1.64
1.5	4	1.5	8	—	.895
6	4	2	6	—	1.005

High-carbon chromium ..... .70
Oil hardened manganese ..... .39
Special carbon ..... .355
Extra carbon ..... .30
Regular carbon ..... .25

Warehouse prices on and east of Mississippi are 3.5¢ per lb. higher. West of Mississippi, 5.5¢ higher.

MERCHANT WIRE PRODUCTS

F.o.b. Mill	Standard & Coated Nails	Woven Wire Fence 9–15½ ga.	"T" Fence Posts	Single Loop Bale Ties	Twisted Barbless Wire	Galv. Barbed Wire	Merch. Wire Annld	Merch. Wire* Galv.
	Col	Col	Col	Col	Col	Col	¢/lb.	¢/lb.
Alabama City *R3*	131	140	...	149	...	153	6.675	7.075
Aliquippa, Pa. *J3*	131	142	...	...	...	150	6.675	7.20
Atlanta *A8*	133	145	...	151	...	158	6.775	7.30
Bartonville *K2*	131	143	...	...	...	156	.....	.....
Buffalo *W6*	.....	.....	.....	.....	.....	.....	.....	.....
Chicago, Ill *N4*	131	142	...	149	155	155	6.675	7.175
Cleveland *A6*	137	.....	.....	.....	.....	.....	.....	.....
Cleveland *A5*	.....	.....	.....	.....	.....	.....	6.675	.....
Crawfordsvl. *M4*	133	145	...	151	...	153	6.775	7.325
Donora, Pa. *A5*	131	140	...	149	...	153	6.675	7.075
Duluth *A5*	131	140	145	149	...	153	6.675	7.075
Fairfield, Ala. *T2*	131	140	...	149	...	153	6.675	7.075
Galveston *D4*	139	148	...	...	...	...	6.675	7.075
Houston *S2*	139	151	...	...	...	164	7.075	7.625
Johnstn., Pa. *B3*	131	143	145	...	156	156	6.675	7.225
Joliet, Ill. *A5*	131	140	...	149	...	153	6.675	7.075
Kokomo, Ind. *C9*	133	142	...	151	...	155	6.775	7.175
Los Angeles *B2*	.....	.....	.....	.....	.....	.....	7.625	.....
Kansas City *S2*	143	155	...	161	...	168	7.275	7.825
Minnequa *C6*	136	148	150	154	162	162	6.925	7.325
Monessen *P6*	131	145	...	...	...	157	6.675	7.225
Moline, Ill. *R3*	.....	.....	145	.....	.....	.....	.....	.....
Pittsburg, Cal. *C7*	150	163	...	173	173	173	7.625	8.075
Portsmouth *P7*	.....	.....	.....	.....	.....	.....	6.675	.....
Rankin, Pa. *A5*	131	140	.....	.....	.....	153	6.675	7.075
So. Chicago *R3*	131	140	145	149	...	153	6.675	7.075
S. San Fran. *C6*	.....	.....	.....	.....	.....	173	.....	.....
Sparrows Pt. *B3*	133	.....	...	151	158	158	6.775	7.325
Struthers, O. *Y1*	.....	.....	.....	.....	.....	.....	6.675	7.175
Worcester *A5*	137	.....	.....	.....	.....	.....	6.975	.....
Williamsport, Pa. *S10*	133	.....	158	.....	.....	.....	.....	.....

Cut Nails, carloads, base $8.00 per keg (less 20¢ to jobbers), at Conshohocken, Pa. (*A2*).
* Alabama City and So. Chicago don't include zinc extra. Galvanized products computed with zinc at 11.0¢ per lb.

C-R SPRING STEEL

Cents Per Lb. F.o.b. Mill	CARBON CONTENT 0.26–0.40	0.41–0.60	0.61–0.80	0.81–1.05	1.06–1.35
Bridgeport, Conn. *S7**	5.75	7.65	8.60	10.55	12.65
Carnegie, Pa. *S9*	.....	7.65	8.60	10.55	12.65
Cleveland *A5*	5.45	7.65	8.60	10.55	12.65
Detroit *D1*	5.65	7.85	8.45	10.55	.....
Detroit *D2*	5.65	7.85	8.80	.....	.....
Harrison, N. J. *C11*	.....	.....	8.90	10.85	13.15
New Castle, Pa. *B4*	5.80	8.00	8.60	.....	.....
New Haven, Conn. *D1*	5.90	7.95	8.55	10.65	.....
Riverdale, Ill. *A1*	5.70	7.80	8.75	10.70	13.00
Sharon, Pa. *S1*	5.45	7.65	8.60	10.55	12.85
Trenton *R4*	.....	7.95	8.90	10.85	13.15
Wallingford *W1*	6.20	7.95	8.90	10.85	13.15
Warren, Ohio *T4*	5.45	7.65	8.60	10.55	12.85
Weirton, W. Va. *W3*	5.45	7.65	8.60	10.55	12.85
Worcester, Mass. *A5*	6.30	7.95	8.90	10.85	13.15
Youngstown *C5*	.....	8.00	8.60	10.55	12.85

* Sold on Pittsburgh base.

BOILER TUBES

$ per 100 ft. carload lots, cut 10 to 24 ft. F.o.b. Mill	Size OD-In.	Size B.W Ga.	Seamless H.R.	Seamless C.D.	Elec. Weld H.R.	Elec. Weld C.D.
Babcock & Wilcox..	2	13	30.08	36.28	26.51	31.98
	2½	12	40.51	48.86	35.70	43.07
	3	12	45.92	55.39	41.23	49.73
	3½	11	53.60	64.65	48.13	58.06
	4	10	65.91	79.50	63.92	77.10
National Tube....	2	13	....	32.98	26.51	.....
	2½	12	36.82	44.41	35.70	.....
	3	12	42.52	51.28	41.23	.....
	3½	11	49.63	59.87	48.13	.....
	4	10	65.91	79.50	63.92	.....
Pittsburgh Steel....	2	13	27.34	32.98	.....	.....
	2½	12	36.82	44.41	.....	.....
	3	12	42.52	51.28	.....	.....
	3½	11	49.63	59.87	.....	.....
	4	10	65.91	79.50	.....	.....

WAREHOUSES

Base price, f.o.b., dollars per 100 lb.

Cities	City Delivery Charge	Sheets: Hot-Rolled	Sheets: Cold-Rolled (15 gage)	Sheets: Galvanized (10 gage)	Strip: Hot-Rolled	Strip: Cold-Rolled	Plates	Shapes: Standard Structural	Bars: Hot-Rolled	Bars: Cold-Finished	Alloy Bars: Hot-Rolled A 4615 As rolled	Alloy Bars: Hot-Rolled A 4140 Annealed	Alloy Bars: Cold-Drawn A 4615 As rolled	Alloy Bars: Cold-Drawn A 4140 Annealed
Baltimore	$.20	6.20	7.64	7.78	7.00	.....	6.85	6.98	6.86	8.17	.....	.....	.....	.....
Birmingham	.15	6.15	7.00	8.00[4]	6.30	.....	6.35	6.35	6.15	8.75	.....	.....	.....	.....
Boston	.20	6.89	7.83	9.18	7.13	9.23–9.35[3]	7.13	7.06	6.87	8.35	.....	12.05	.....	14.50
Buffalo	.20	6.20–6.35	7.15–7.70	9.00–9.01	6.65–6.79	.....	6.65–6.68	6.55–6.59	6.35	7.70	.....	11.95	.....	14.25
Chicago	.20	6.18	7.12	8.00	6.42	.....	6.33–6.38	6.46	6.28	7.30	.....	11.75	.....	14.25
Cincinnati	.15	6.51	7.19	8.42	6.72	.....	6.80	6.93	6.58	7.66	.....	12.17	.....	14.87
Cleveland	.20	6.18	7.12	7.90	6.58	.....	6.50	6.79	6.34	7.40	.....	11.89	.....	14.39
Denver	.....	7.95	8.85	10.47	8.20	9.55	7.95	7.95	8.05	9.05	.....	16.05	.....	15.75
Detroit	.20	6.35–6.45	7.29–7.31	8.27	6.69–7.71	7.36	6.80	6.91–6.93	6.56	7.80	.....	11.92	.....	13.44–14.62
Houston	.20	7.15	7.60–7.85	9.40	7.45	.....	7.20	7.35	7.45	9.30	.....	12.95	.....	.....
Kansas City	.20	6.85	7.79	8.67	7.09	.....	7.00–7.05	7.13	6.95	8.08	.....	12.42	.....	.....
Los Angeles	.20	7.25	9.00	9.35	7.55	10.75–11.30	7.20	7.35	7.15–7.25	9.10–9.75	13.20	13.05	15.75	15.85–16.05
Memphis	.10	6.79	7.69	.....	6.90	.....	7.01	7.09	6.88	7.89–8.31	.....	.....	.....	.....
Milwaukee	.20	6.35	7.12	8.00–8.17	6.59–6.60	8.07	6.50–6.56	6.61–6.63	6.45	7.57	.....	11.92	.....	14.42
New Orleans	.15	6.51	7.41	9.32	6.63	10.42	6.73	6.81–7.45	6.60	8.42–10.42	.....	.....	.....	.....
New York	.30	6.78	7.75[5]–8.20	8.42–9.00[3]	7.16	9.05	6.99	6.90	7.06	8.43	12.29	12.14	14.54	14.64
Norfolk	.20	6.90	.....	.....	7.20	.....	7.15	7.20	7.20	8.50	.....	.....	.....	.....
Philadelphia	.25	6.60	7.38	8.15	7.02	.....	6.63	6.67	6.87	8.24	12.04	11.89	14.29	14.39
Pittsburgh	.20	5.95–6.18	6.82–7.12	7.95–8.00	6.20–6.55	.....	6.03–6.33	6.07–6.46	5.96–6.28	7.65	.....	11.45–11.75	.....	13.75–14.25
Portland	.10	8.15–8.95	8.70–9.85	9.40	7.90	.....	7.55	7.50	7.60	10.05	.....	.....	.....	.....
Salt Lake City	.20	9.05	10.80	10.65	9.35	11.25	8.70	8.85	9.10–9.20	11.25	.....	.....	.....	.....
San Francisco	.20	7.35	8.70	9.90–10.15	7.60	10.35	7.20	7.25	7.15	9.75–9.85	13.20	12.80–13.05	15.50	15.55–16.05
Seattle	.20	8.15	9.50	9.80	8.00	.....	7.60	7.50	7.60	10.65	.....	13.40	.....	16.00
St. Louis	.20	6.48	7.42	8.30	6.72	8.47	6.73	6.86	6.58	7.50–7.70	12.20	12.05	12.20	14.55
St. Paul	.15	6.84	7.78	8.66	7.08	.....	6.99	7.12	6.94	8.06	.....	12.42	.....	.....

Base Quantities (Standard unless otherwise keyed): Cold finished bars: 2000 lb or over. Alloy bars: 1000 to 1999 lb. All others: 2000 to 9999 lb. All HR products may be combined for quantity. All galvanized sheets may be combined for quantity. CR sheets may not be combined with each other or with galvanized sheets, for quantity.
Exceptions: (1)500 to 1499 lb. (2)20,000 lb or over. (3)450 to 1499 lb. (4)500 to 9999 lb. (5)1000 lb or over. (6)400 to 1499 lb.

Miscellaneous Prices

(Effective Feb. 9, 1954)

RAILS, TRACK SUPPLIES

F.o.b. Mill Cents Per Lb	No. 1 Std. Rails	Light Rails	Joint Bars	Track Spikes	Screw Spikes	Tie Plates	Track Bolts Treated
Bessemer *UI*	4.325	5.20	5.275				
Chicago *R3*				7.05			
Cleveland *R3*							
Ensley *T2*	4.325	5.20					
Fairfield *T2*		5.20				5.125	
Gary *UI*	4.325	5.20				5.125	
Ind. Harbor *I3*	4.325		5.275	7.05		5.125	
Johnstown *B3*		5.20					
Joliet *UI*		5.20	5.275				
Kansas City *S2*				7.30			11.00
Lackawanna *B3*	4.325	5.20	5.275			5.125	
Lebanon *B3*				7.05	10.50		11.00
Minnequa *C6*	4.325	5.70	5.275	7.05		5.125	11.00
Pittsburgh *OI*					10.50		11.00
Pittsburgh *P5*					10.50		11.00
Pittsburgh *J3*				7.05			
Pitt'g, Cal. *C7*						5.275	
Seattle *B2*				7.55		5.275	11.50
Steelton *B3*	4.325		5.275			5.125	
Struthers *Y1*							
Torrance *C7*						5.275	
Youngstown *R3*				7.05			

LAKE SUPERIOR ORES

51.50% *Fe; natural content, delivered lower Lake ports. Prices effective July 1, 1953, to end of season.*

	Gross Ton
Openhearth lump	$11.15
Old range, bessemer	10.30
Old range, nonbessemer	10.15
Mesabi, bessemer	10.05
Mesabi, nonbessemer	9.90
High phosphorus	

Prices based on upper Lake rail freight rates, Lake vessel freight rates, handling and unloading charges, and taxes thereon, in effect on June 24, 1953. Increases or decreases after such date are for buyer's account.

COKE

	Net-Ton
Furnace, beehive (f.o.b. oven) Connellsville, Pa.	$14.25 to $14.50
Foundry, beehive (f.o.b. oven) Connellsville, Pa.	$16.50 to $17.00
Foundry, oven coke	
Buffalo, del'd	$28.08
Chicago, f.o.b.	24.50
Detroit, f.o.b.	25.50
New England, del'd	26.05
Seaboard, N. J., f.o.b.	24.00
Philadelphia, f.o.b.	23.95
Swedeland, Pa., f.o.b.	23.85
Painesville, Ohio, f.o.b.	24.00
Erie, Pa., f.o.b.	25.00
Cleveland, del'd	27.43
Cincinnati, del'd	26.56
St. Paul, f.o.b.	23.75
St. Louis, f.o.b.	26.00
Birmingham, del'd	23.21
Lone Star, Tex., f.o.b.	18.50

ELECTRODES

Cents per lb, f.o.b. plant threaded electrodes with nipples, unboxed

Diam. in in.	Length in in.	Cents Per lb.
	GRAPHITE	
24	84	20.50
20	72	20.00
12, 14, 18	72	20.50
7 to 10	60	21.00
6	60	23.25
4	60	25.00
3	40	26.00
2½	40	27.25
2	24	43.50
	CARBON	
40	100, 110	8.95
35	110	8.95
30	110	8.95
24	72 to 84	9.10
20	90	8.95
17	72	9.10
14	72	9.50
10, 12	60	10.30
8	60	10.55

BOLTS, NUTS, RIVETS, SCREWS

Consumer Prices

(Base, discount, f.o.b. mill, Pittsburgh, Cleveland, Birmingham or Chicago)

Nuts, Hot Pressed, Cold Punched—Sq.

	Pct Off List Less Keg Reg.	K.	Less Keg Hvy.	K.
½ in. & smaller	+2	15	+2	18
9/16 in. & ⅝ in.	+7	11	+32*	+10*
¾ in. to 1½ in. inclusive	+8	10	+27**	+6**
1⅝ in. & larger	+9	9	+27	+6

* 9/16 to ¾ in.
** ⅞ to 1½ in.

Nuts, Hot Pressed—Hexagon

½ in. & smaller	11	26	8	23
9/16 in. & ⅝ in.	2	18	+20	net
¾ in. to 1½ in. inclusive	+6	12	+25	+4
1⅝ in. & larger	+8	10	+25	+4

Nuts, Cold Punched—Hexagon

½ in. & smaller	11	26	8	23
9/16 in. & ⅝ in.	9	24	+2	15
¾ in. to 1½ in. inclusive	+1	16	+9	9
1⅝ in. & larger	+16	3	+20	net

Nuts, Semi-Finished—Hexagon

½ in. & smaller	23	36	14	28
9/16 in. & ⅝ in.	18	32	4	20
¾ in. to 1½ in. inclusive	8	23	+8	10
1⅝ in. & larger	+14	5	+20	net
	Light			
7/16 in. & smaller	33	43		
½ in. thru ⅝ in.	26	37		
¾ in. to 1½ in. inclusive	18	30		

Stove Bolts *Pct Off List*

Packaged, steel, plain finished	44½—10
Packaged, plain finish	25½—10
Bulk, plain finish**	59*

*Discounts apply to bulk shipments in not less than 15,000 pieces of a size and kind where length is 3-in. and shorter; 5000 pieces for lengths longer than 3-in. For lesser quantities, packaged price applies.

**Zinc, Parkerized, cadmium or nickel plated finishes add 6¢ per lb net. For black oil finish, add 2¢ per lb net.

Rivets *Base per 100 lb*

½ in. & larger	$8.90
	Pct Off List
7/16 in. and smaller	30

Cap and Set Screws

(In bulk) *Pct Off List*

Hexagon head cap screws, coarse or fine thread, ¼ in. thru ⅝ in. x 6 in., SAE 1020, bright	40
¾ in. thru 1 in. up to & including 6 in.	26
¼ in. thru ⅝ in. x 6 in. & shorter high C double heat treat	43
¾ in. thru 1 in. up to & including 6 in.	33
Milled studs	17
Flat head cap screws, listed sizes	12
Fillister head cap, listed sizes	7
Set screws, sq head, cup point, 1 in. diam. and smaller x 6 in. & shorter	37

Machine and Carriage Bolts

	Pct Off List Less Case	C.
½ in. & smaller x 6 in. & shorter	4	20
9/16 in. & ⅝ in. x 6 in. & shorter	5	21
¾ in. & larger x 6 in. & shorter	3	19
All diam. longer than 6 in.	+4	13
Lag, all diam. x 6 in. & shorter	12	27
Lag, all diam. longer than 6 in.	8	23
Plow bolts	30	

REFRACTORIES

Fire Clay Brick *Carloads per 1000*

First quality, Ill., Ky., Md., Mo., Ohio, Pa. (except Salina, Pa., add $5.00)	$109.00
No. 1 Ohio	102.00
Sec. quality, Pa., Md., Ky., Mo., Ill.	102.00
No. 2 Ohio	93.00
Ground fire clay, net ton, bulk (except Salina, Pa. add $1.50)	16.00

Silica Brick

Mt. Union, Pa., Ensley, Ala.	$115.00
Childs, Hays, Pa.	120.00
Chicago District	125.00
Western Utah	121.00
California	138.00
Super Duty Hays, Pa., Athens, Tex., Windham	132.00
Curtner, Calif.	150.00
Silica cement, net ton, bulk, Eastern (except Hays, Pa.)	19.00
Silica cement, net ton, bulk, Hays, Pa.	21.00
Silica cement, net ton, bulk, Chicago District, Ensley, Ala.	20.00
Silica cement, net ton, bulk, Utah and Calif.	28.50

Chrome Brick *Per net ton*

Standard chemically bonded Balt.	$86.00
Standard chemically bonded, Curtner, Calif.	96.25
Burned, Balt.	80.00

Magnesite Brick

Standard Baltimore	$109.00
Chemically bonded, Baltimore	97.50

Grain Magnesite *St. ⅜-in. grains*

Domestic, f.o.b. Baltimore in bulk fines removed	$64.40
Domestic, f.o.b. Chewalah, Wash., in bulk	38.00
in sacks	43.75

Dead Burned Dolomite *Per net ton*

F.o.b., bulk, producing points in: Pa., W. Va., Ohio	$14.50
Midwest	14.60
Missouri Valley	13.65

FLUORSPAR

Washed gravel, f.o.b. Rosiclaire, Ill. Price, net ton; Effective CaF_2 content

72½%	$44.00
70% or more	42.50
60% or less	38.00

METAL POWDERS

Per pound, f.o.b. shipping point, in ton lots, for minus 100 mesh.

Swedish sponge iron, c.i.f. New York, ocean bags	11.25¢
Canadian sponge iron, del's. in East	12.0¢
Domestic sponge iron, 98+% Fe, carload lots	18.0¢
Electrolytic iron, annealed, 99.5+% Fe	44.0¢
Electrolytic iron, unannealed, minus 325 mesh, 99+% Fe	60.0¢
Hydrogen reduced iron minus 300 mesh, 98+% Fe	63.0¢ to 80.0¢
Carbonyl iron, size 5 to 10 micron, 98%, 99.8+% Fe	83.0¢ to $1.48
Aluminum	31.5¢
Brass, 10 ton lots	29.50¢ to 36.50¢
Copper, electrolytic	43.50¢
Copper, reduced	43.50¢
Cadmium, 100-199 lb 95¢ plus metal value	
Chromium, electrolytic, 99% min., and quality, del'd	$3.60
Lead	21.75¢
Manganese	57.0¢
Molybdenum, 99%	$2.75
Nickel, unannealed	89.50¢
Nickel, annealed	96.50¢
Nickel, spherical, unannealed	93.50¢
Silicon	43.50¢
Solder powder 7.0¢ to 9.0¢ plus met. value	
Stainless steel, 302	91.0¢
Stainless steel, 316	$1.10
Tin	14.04¢ plus metal value
Tungsten, 99% (65 mesh)	$5.35
Zinc, 10 ton lots	17.5¢ to 25.0¢

Ferroalloy Prices

(Effective Feb. 9, 1954)

Ferrochrome

Contract prices, cents per lb contained Cr, lump size, bulk, in carloads, delivered.

65-72 Cr, 2% max. Si.

0.025% C	34.50	0.20% C	33.50
0.06% C	34.50	0.50% C	33.25
0.10% C	34.00	1.00% C	33.00
0.15% C	33.75	2.00% C	32.75

65-69% Cr, 4.9% C 24.75
62-66% Cr, 4.6% C, 6-9% Si 25.60

S. M. Ferrochrome

Contract price, cents per pound, chromium contained, lump size, delivered.

High carbon type: 60.65% Cr, 4-6% Si, 4-6% Mn, 4-6% C.

Carloads 25.85
Ton lots 28.00
Less ton lots 29.50

High-Nitrogen Ferrochrome

Low-carbon type 67-72% Cr, 0.75% N. Add 5¢ per lb to regular low carbon ferrochrome price schedule. Add 3¢ for each additional 0.25% of N.

Chromium Metal

Contract prices, per lb chromium contained, packed, delivered, ton lots, 97% min. Cr, 1% max. Fe.

0.10% max. C $1.18
0.50% max. C 1.14
9 to 11% C 1.11

Low Carbon Ferrochrome Silicon

(Cr 34-41%, Si 42-49%, C 0.05% max.) Contract price, carloads, f.o.b. Niagara Falls, freight allowed, lump 4-in. x down, bulk 2-in. x down, 24.75¢ per lb of contained Cr plus 12.40¢ per lb of contained Si.

Bulk 1-in. x down, 24.90¢ per lb contained Cr plus 12.69¢ per lb contained Si.

Calcium-Silicon

Contract price per lb of alloy, lump delivered.

30-33% Cr, 60-65% Si, 3.00% max. Fe.

Carloads 19.00
Ton lots 22.10
Less ton lots 23.60

Calcium-Manganese—Silicon

Contract prices, cents per lb of alloy lump, delivered.

16-20% Ca, 14-18% Mn, 53-59% Si.

Carloads 20.00
Ton lots 22.30
Less ton lots 23.30

SMZ

Contract price, cents per pound of alloy, delivered, 60-65% Si, 5-7% Mn, 5-7% Zr, 20% Fe ½ in. x 12 mesh.

Ton lots 17.50
Less ton lots 19.50

V Foundry Alloy

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis, V-5; 38-42% Cr, 17-19% Si, 8-11% Mn.

Ton lots 16.50
Less ton lots 17.75

Graphidox No. 4

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis. Si 48 to 52%, Ti 9 to 11%, Ca 5 to 7%.

Carload packed 17.50
Ton lots to carload packed 18.50
Less ton lots 20.00

Ferromanganese

Maximum contract base price, f.o.b., lump size, base content 74 to 75 pct Mn:

Producing Point	Cents per-lb
Marietta, Ashtabula, O.; Alloy, W. Va.; Sheffield, Ala.; Portland Ore.	10.00
Clairton, Pa.	10.00
Sheridan, Pa.	10.00

Add or subtract 0.1¢ for each 1 pct Mn above or below base content.

Briquets, delivered, 66 pct Mn:

Carloads, bulk 12.50
Ton lots, packed 14.05

Spiegeleisen

Contract prices, per gross ton, lump, f.o.b. Palmerton, Pa.

Manganese	Silicon	
16 to 19%	3% max.	$84.00
19 to 21%	3% max.	86.00
21 to 23%	3% max.	88.50
23 to 25%	3% max.	91.00

Manganese Metal

Contract basis, 2 in. x down, cents per pound of metal, delivered.

95.50% min. Mn, 0.2% max. C, 1% max. Si, 2.5% max. Fe.

Carload, packed 36.95
Ton lots 38.45

Electrolytic Manganese

F.o.b. Knoxville, Tenn., freight allowed east of Mississippi, cents per pound.

Carloads 31.50
Ton lots 33.50
Less ton lots 35.50
Premium for hydrogen-removed metal 1.50

Medium Carbon Ferromanganese

Mn 80% to 85%, C 1.25 to 1.50. Contract price, carloads, lump, bulk, delivered, per lb of contained Mn ..... 21.35¢

Low-Carb Ferromanganese

Contract price, cents per pound Mn contained, lump size, del'd Mn 85-90%.

	Carloads	Ton	Less
0.07% max. C, 0.06% P, 90% Mn	30.00	31.85	33.05
0.07% max. C	27.95	29.80	31.00
0.15% max. C	27.45	29.30	30.50
0.30% max. C	26.95	28.80	30.00
0.50% max. C	26.45	28.30	29.50
0.75% max. C, 80-85% Mn, 5.0-7.0% Si	23.45	25.30	26.50

Silicomanganese

Contract basis, lump size, cents per pound of metal, delivered, 65-68% Mn, 18-20% Si, 1.5% max. C for 2% max. C, deduct 0.2¢.

Carload bulk 11.40
Ton lots 13.05
Briquet contract basis carlots, bulk delivered, per lb of briquet 12.65
Ton lots, packed 14.25

Silvery Iron (electric furnace)

Si 14.01 to 14.50 pct, f.o.b. Keokuk, Iowa, or Wenatchee, Wash., $92.00 gross ton, freight allowed to normal trade area. Si 15.01 to 15.50 pct, f.o.b. Niagara Falls, N. Y., $89.50. Add $1.00 per ton for each additional 0.50% Si up to and including 17%. Add $1.45 for each 0.50% Mn over 1%.

Silicon Metal

Contract price, cents per pound contained Si, lump size, delivered, packed.

	Ton Lots	Carloads
96% Si, 2% Fe	20.10	18.00
97% Si, 1% Fe	20.60	18.50

Silicon Briquets

Contract price, cents per pound of briquet bulk, delivered, 40% Si, 2 lb Si briquets.

Carloads, bulk 6.95
Ton lots 8.55

Electric Ferrosilicon

Contract price, cents per lb contained Si, lump, bulk, carloads, delivered.

25% Si	20.00	75% Si	14.30
50% Si	12.40	85% Si	15.55
65% Si	13.60	90.95% Si	17.00

Calcium Metal

Eastern zone contract prices, cents per pound of metal, delivered.

	Cast	Turnings	Distilled
Ton lots	$2.05	$2.95	$3.75
Less ton lots	2.40	3.30	4.55

Ferrovanadium

35-55% contract, basis, delivered, per pound, contained V.

Openhearth ..... $3.00-$3.10
Crucible 3.10- 3.20
High speed steel (Primos) 3.20- 3.25

Alsifer, 20% Al, 40% Si, 40% Fe, contract basis f.o.b. Suspension Bridge, N. Y.

Carloads 9.90
Ton lots 11.30

Calcium molybdate, 46.3-46.6% f.o.b. Langeloth, Pa., per pound contained Mo. $1.15

Ferrocolumbium, 50-60% 2 in. x D contract basis, delivered per pound contained Cb.

Ton lots $6.40
Less ton lots 6.45

Ferro-Tantalum-Columbium, 20% Ta, 40% Cb, 0.30% C. Contract basis, delivered, ton lots, 2 in. x D, per lb of contained Cb plus Ta $4.75

Ferromolybdenum, 55-75%, f.o.b. Langeloth, Pa., per pound contained Mo. $1.32

Ferrophosphorus, electric, 23-26%, car lots, f.o.b. Siglo, Mt. Pleasant, Tenn., $4.00 unitage, per gross ton $90.00
10 tons to less carload $110.00

Ferrotitanium, 40% regular grade, 0.10% C max., f.o.b. Niagra Falls, N. Y., and Bridgeville, Pa., freight allowed, ton lots, per lb contained Ti $1.35

Ferrotitanium, 25% low carbon, 0.10% C max., f.o.b. Niagara Falls, N. Y., and Bridgeville, Pa., freight allowed, ton lots, per lb contained Ti $1.50
Less ton lots 1.55

Ferrotitanium, 15 to 18% high carbon, f.o.b. Niagara Falls, N. Y., freight allowed, carload, per net ton $177.00

Ferrotungsten, ¼ x down, packed, per pound contained W, ton lots, f.o.b. $3.80

Molybdic oxide, briquets or cans, per lb contained Mo, f.o.b. Langeloth, Pa. $1.14
bags, f.o.b. Washington, Pa., Langeloth, Pa. $1.13

Simanal, 20% Si, 20% Mn, 20% Al, contract basis, f.o.b. Philo, Ohio, freight allowed, per pound

Carload, bulk lump ..... 14.50¢
Ton lots, bulk lump ..... 15.75¢
Less ton lots, lump ..... 16.25¢

Vanadium Pentoxide, 86-89% V_2O_5 contract basis, per pound contained V_2O_5 ..... $1.31

Zirconium, 35-40%, contract basis, f.o.b. plant, freight allowed, per pound of alloy.

Ton lots ..... 21.00¢

Zirconium, 12-15%, contract basis, lump, delivered, per lb of alloy.

Carload, bulk ..... 8.00¢

Boron Agents

Borosil, contract prices per lb of alloy del. f.o.b. Philo, Ohio, freight allowed, B, 3-4%, Si, 40-45%, per lb contained B $6.35

Bortam, f.o.b. Niagara Falls

Ton lots, per pound ..... 45¢
Less ton lots, per pound ..... 50¢

Corbortam, Ti 15-21%, B, 1-2%, Si, 2-4%, Al, 1-2%, C, 4.5-7.5% f.o.b. Suspension Bridge, N. Y., freight allowed.

Ton lots per pound ..... 10.00¢

Ferroboron, 17.50% min. B, 1.50% max. Si, 0.50% max. Al, 0.50% max. C, 1 in. x D, Ton lots $1.20
F.o.b. Wash., Pa.; 100 lb up

10 to 14% B ..... .95
14 to 10% B 1.20
19% min. B 1.50

Grainal, f.o.b. Bridgeville, Pa., freight allowed, 100 lb and over

No. 1 ..... $1.00
No. 6 ..... 68¢
No. 79 ..... 50¢

Manganese-Boron, 75.00% Mn, 15-20% B, 5% max. Fe, 1.50% max. Si, 3.00% max. C, 2 in. x D, del'd

Ton lots $1.46
Less ton lots 1.57

Nickel-Boron, 15-18% B, 1.00% max. Al, 1.50% max. Si, 0.50% Max C, 3.00% max. Fe, balance Ni, delivered $2.05
Less ton lots ..... 45.00¢

Silcaz, contract basis, delivered

Ton lots ..... 45.00¢

TOPS in FOUNDRY SERVICE

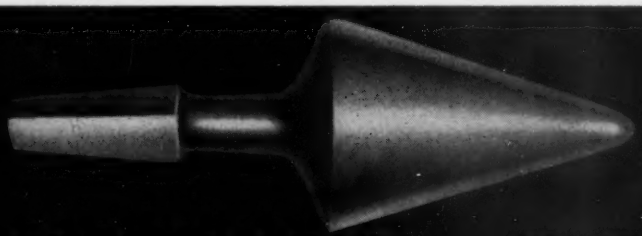
iron, steel, non-ferrous castings, gear cutting, machine work

The top quality of SERVICE FOUNDRY'S workmanship is your best guarantee of service . . . from expert metallurgical control in castings, to the precise skill given to gear cutting and machine work.

SERVICE FOUNDRY a division of **AVONDALE MARINE WAYS, Inc.**

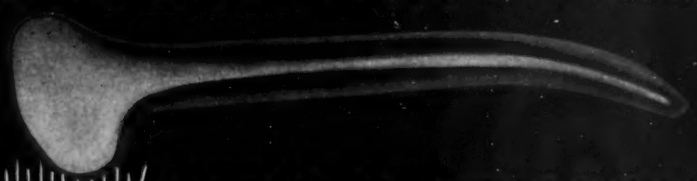
416 Erato Street, New Orleans, U. S. A. P. O. Box 1030, New Orleans, U. S. A.

Cable Address: "Serfdry"



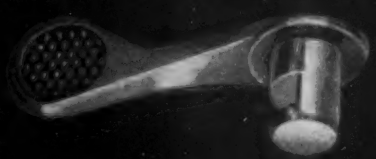
RITCO

SAVE MACHINING COSTS . . . WITH



RITCO

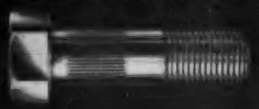
RITCO BRIGHT FINISH DROP FORGINGS



RITCO

Ritco Bright Finish Drop Forgings pay big dividends in reduced machining costs and improved product performance. Clean and accurate, they are produced to your blueprint in steel or non-ferrous metals . . . weights from ¼ lb. to 15 lbs. In addition to forgings, Ritco makes special fasteners and finished bolts with regular or heavy heads. Our complete finishing facilities are also available for machining and grinding. Send blueprints for free estimates. Rhode Island Tool Company, 148 West River Street, Providence 1, R. I.

Exclusive New England Representatives for Cleveland Cap Screw Co.



1834 ★ 1954

SERVING AMERICAN INDUSTRY FOR 120 YEARS

RE-NU-BILT
GUARANTEED
ELECTRIC POWER EQUIPMENT

D. C. MOTORS

Qu.	H.P.	Make	Type	Volts	RPM
1	2200	G.E.	MCF	600	400/500
1	2000	Whse.	Mill	600	230/460
1	1300	G.E.	MCF	600	750/950
1	940	Whse.	QM	250	140/170
1	900	Whse.		250	450/550
1	825	Whse.		250	95/190
1	600	Al. Ch.		250	400/800
1	580	Whse.	CC-216	900	300/900
1	500	G.E.	MCF	600	300/900
2	450	Whse.		550	415
1	400	G.E.	MCF	550	300/1050
1	300	Whse.	CB-5094	250	575/1150
1	300/300	G.E.	MPC	230	360/920
1	250	G.E.	MPC	230	400/600
1	200	Rel.	1970T	230	720
1	200	Whse.	CB-5113	250	400/800
1	150	G.E.		600	250/750
1	150	Cr. Wh.	65H	230	1150
8	150	Cr. Wh.	83H-TEFC	230	890
1	150	Whse.	SK-151B	230	900/1800
1	150	Whse.	SK-201	230	360/950
1	50/130	G.E.	MCF	230	230/1000
2	100	Whse.	SK-181	230	450/1090
1	100	G.E.	CDP-115	230	1750

A. C. MOTORS

3 phase—60 cycle

SLIP RING

Qu.	H.P.	Make	Type	Volts	Speed
1	1500	G.E.	MT-498	2300	360
1	1500	ABB		2300	720
1	1300	G.E.	MT	2300	275
2	1000	A.C.	Mill	2300	240
1	1000	G.E.	MT-452	2300	321
1	500	G.E.	M-574Y	6900	990
1	500	Whse.	CW	550	350
1	450	G.E.	IM	440	720
1	400	Whse.	CW-960A	440	1170
1	400	Whse.	CW	440	514
1	400	Whse.	CW-1218	2200	435
1	350	G.E.	MT-442Y	2200/4000	253
1	350	G.E.	IM-17A	440/2200	720
1	250	G.E.	MT-424-Y	4000	257
1	250	G.E.	MT-559S	2200	1800
1	250	Al. Ch.		550	600
1	200	Cr. Wh.	26QB	440	505
1	200	G.E.	IM	440	435
1	200	G.E.	MTP	440	1170
1	150 (unused)	Whse.	CW	2300	435
1	150	G.E.	IM-16	440	600
2	125	A.C.		440	865
1	125	Al. Ch.		440	720
4	125	G.E.	MT-566Y	440/2200	435
1	100	G.E.	IM	440	800
4	100	A.C.	ANY	440	695

SQUIRREL CAGE

2	650	G.E.	FT-559BY	440	3570
2	450	Whse.	CS-1420	2300/4150	354
1	300	Whse.	CS	440	1170
1	200	G.E.	IK-17	440	580
3	200	G.E.	KT-557	440	1800
1	150	Whse.	CS-856S	440	880
1	150	Whse.	CS	440	580
1	150/75	G.E.	IK	440	900/450
2	125	Al. Ch.	ARW	2200	1750

SYNCHRONOUS

1	4350	C.W.	3501-8L	13800/6900	514
2	3500	G.E.	TS	2300	257
2	2100	G.E.	ATI	2300	360
2	1750	G.E.	ATI	2300	3600
2	2000	Whse.		2300	120
2	735	G.E.	ATI	2200/12000	600
1	720	G.E.	TS	2300/4600	720
1	500	Ideal	SM	2300/4160	1800
1	500	Whse.		440	900
1	450	Whse.		2200	128.5
1	450	Whse.		2200	450
1	400	G.E.	TS	2200	400

M-G Sets—3 Ph. 60 Cy.

Qu.	K.W.	Make	RPM	D.C. Volts	A.C. Volts
2	2000/2400	G.E.	450	250/300	2300/4600
2	1750/2100	G.E.	514	250/300	2300/4600
1	2000	G.E.	500 25cy	660	11000
2	2000	G.E.	514	600	6600/13200
1	1500	G.E.	720	600	6600/13200
1	1500	C.W.	514	30/115	4000/13000
2	1000	Whse.	900	600	4160
1	1000	G.E.	900	260	6600
1	1000 (3U)	G.E.	900	250	2200
1	750	Whse.	900	275	4160
1	750	C.W.	514	30/115	2300
1	600	G.E.	720	250	440/2300

TRANSFORMERS

Qu.	KVA	Make	Type	Ph.	Voltages
1	5000	Whse.	OISC	3	3300x26400
1	2500	Whse.	OISC	3	26400/13200x460
3	2000	G.E.	HVDDJ	1	66000x13800
1	1500	G.E.	HT	3	13200x2300
3	1000	G.E.	HVDDJ	1	2400x480
6	1000	Wagner	OISC	1	13200x460

FREQUENCY CHANGER SETS

Qu.	KW	Make	Freq.	Voltages
1	12500	Whse.	25/60	13200/13200
1	3000	G.E.	25/60	2300-2300/4000
2	2500	G.E.	25/62.5	2300/2300
1	1000	G.E.	25/58.3	4400, 2300
1	500	Al. Ch.	2560	11000/2300

BELYEA COMPANY, INC.

47 Howell Street, Jersey City 6, N. J.

The Clearing House

NEWS OF USED AND REBUILT MACHINERY

Down 25 Pct . . . Used machinery dealers in both Cleveland and Cincinnati are moaning low again. So far first quarter business has been off about 25 pct from last year. Inquiries are slow coming in and it takes a lot of dickering to make a sale. Most dealers are weary of pointing to the same old maladies: Shortage of late model tools, general slowing of the business pace, high prices. They are more concerned about the basic causes of the industry's troubles and the ways these problems can be solved.

Hasn't a Chance . . According to dealers interviewed by THE IRON AGE general revision of the tax structure and reduction of freight rates are the remedies that are needed first. One large Cleveland dealer summarized the general viewpoint by saying, "The little guy doing in the neighborhood of $100,000 hasn't got a chance under present conditions. Unless he can keep at least $75,000 he just can't afford to be in the market for used machinery."

Another dealer in Cincinnati reported that some of his customers were in the million dollar bracket and still didn't have enough cash left to expand or consider purchasing machinery. Most dealers are convinced this situation could be changed radically if small and medium sized firms had an opportunity to writeoff machinery in 5 to 7 years.

Trend to Leasing . . . Revision of the tax structure might also reverse a strong trend toward renting both new and used machinery. Leasing of new machine tools is a fairly recent development. Whether or not it will continue to develop remains to be seen. Used machinery dealers who are themselves turning more and more to short term leasing, believe something has to be done to keep them from turning into "bankers."

While most are confident the present Administration will provide definite relief, as was indicated in the President's various messages to Congress, they are not optimistic about business prospects until these changes are made.

Freight Rate Trouble . . . Freight rates also present a real problem for used machinery dealers. Machinery Dealers National Assn. has been working for a long time on this matter and its arguments for freight rate reclassification have been fairly well publicized. But many people outside the trade still aren't fully aware how drastically high freight rates limit dealers' market areas.

For example West Coast dealers who formerly came east to rebuild stocks are now out of the market. They just can't afford the cost of a cross-country haul. Same situation applies to eastern dealers who used to search the Midwest for used machinery bargains.

One Ohio dealer recently told THE IRON AGE he had to pass up a sale of government machinery in Omaha because the freight bill would have been $100 more than what he wanted to bid on the machinery.

Metalworkers Sound Off . . . In the recent meeting between metalworking industry executives and Dept. of Commerce officials, the used machinery business was represented by MDNA President Richard Nathans and Randy Vinson, executive director.

Given a chance to express their views, spokesmen for the metalworking industry requested an end of government leasing of machine tools for nondefense work. Although this policy is supposedly already in effect, violations and abuses have been reported.

The metalworking executives also asked for more liberal depreciation tax policy. Thinking right now is that the House Ways & Means Committee will recommend doubling current depreciation rates. Industry had been hoping for more.

OHIO WORKS, BASIC REFRACTORIES INCORPORATED, CLEVELAND, OHIO